BECHUANALAND PROTECTORATE

DEVELOPMENT PLAN

1960 — 1964

AND

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COLONIAL DEVELOPMENT

AND WELFARE SCHEMES

1960 — 1964

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BECHUANALAND PROTECTORATE

DEVELOPMENT PLAN 1960/1964

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PART I.

SECTION I.

INTRODUCTION AND SUMMARY OF PROPOSALS.

With the aid of funds provided under the 1956/1960 Development Plan, marked improvements have taken place in the development and welfare of the Territory. Much more could, and should, be done but during the next four years it is, generally speaking, more important that the funds likely to be available should be devoted as far as possible to the extension, improvement, consolidation or completion of the major development schemes already in hand than that they should be used to embark on new projects involving additional staff and further eventual burdens on an overtaxed budget.

2. The main factors to be borne in mind in considering plans for the development of the Territory are:-

(i) it is one of the most sparsely populated countries in the world with an average population of about 1 to the square mile. While the bulk of the population is concentrated within 50 miles of the railway and in Ngamiland, it is not possible to disregard the remainder of the country as inhabited centres are found at widely scattered points throughout the Territory. Provision of adequate, but frequently uneconomic, means of communication between these centres is an essential and expensive requirement;

(ii) water supplies are barely adequate for existing needs. The low and uncertain rainfall and the vast sand-covered areas (from which there is neither run-off nor percolation to underground storage) present great difficulties, but the provision of water is an essential preliminary to nearly every development or welfare scheme whether it be a minor item such as a new dispensary or a new light industry. There is ample water in the Okavango Swamps but Tsetse Fly, disease, and the remoteness of the area, together with lack of knowledge of the soils and other factors affecting cultivation in the region have so far presented formidable barriers to the development of the district;

(iii) cattle continue to form the basis of the economy and veterinary requirements must have a high priority. In recent months much interest has been shown in the Territory by large mining concerns, and prospecting rights have now been or are about to be granted over much of the country. It would be unduly optimistic to expect any large-scale operations to result from the prospecting as no indications have been found so far of rich mineral deposits or of diamonds. The interest recently shown by one of the companies in the exploitation of the Makarikari salt deposits is however encouraging. There are also large coal deposits very favourably situated close to the railway. The chief

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factor preventing the development of coal-fields is the absence of local markets.

3. The financial and economic position of the Territory is set out in Sections 2 to 16, and detailed proposals for development during 1960/1963 are made in Sections 18 - 28. Most of the schemes will run for the full period 1960/1964, and the approximate requirements for 1963/1964 are also shown. At present however applications for Colonial Development and Welfare grants are being made for the three years 1960/1961 - 1962/1963 only; further applications will be made for 1963/1964 in the light of experience of working of the schemes and of the funds actually available in that year. The Plan takes no account of any additional amounts which may be required as a result of recommendations of the Economic Survey Mission. The proposed arrangements for financing the development are set out in Section 17, from which it will be seen that during 1960/1963 a total provision of about £2½ million is required. Of this amount, about £1 million appears suitable for financing from loan funds; £881,000 will be required from Colonial Development and Welfare funds, and the balance of about £560,000 will have to be provided by contributions from Territorial revenues to Colonial Development and Welfare schemes.

PART II.

THE POSITION AT PRESENT.

SECTION II.

THE FINANCIAL HISTORY OF THE PROTECTORATE.

4. Protectorate resources have always been limited, and in 1940/1941 the Territory was receiving a grant-in-aid from the United Kingdom Treasury. From then till 1956 the Administration balanced its budget and built up a surplus but only by practising the most stringent economy and at the cost of maintaining services at a very low level.

5. In 1952/1953 there was growing criticism of the standards of administration and, in December 1953, the Commonwealth Relations Office recognised that the standard of services fell far short of what was desirable. It was, however, thought that the assistance required by the Protectorate could not be met from Colonial Development and Welfare Funds, since the cost of administration was not properly chargeable to Colonial Development and Welfare. It was also recognised that the revenue of the Protectorate could not bear loan services. The Resident Commissioner was asked to estimate requirements broadly, but realistically, with an eye to the degree of expansion practicable, and approval was to be sought for a grant-in-aid of the order considered necessary and for preparation of detailed Estimates within the total of the desired sum plus territorial revenue.

6. This was done, but the Resident Commissioner pointed out that conditions of service and salaries should also be improved to permit of competition for staff with other colonies, as otherwise the provision of additional funds would be an empty gesture. This was subsequently recognised in the 1955 internal salaries revision. (A further revision was made in 1959 by Sir Rex Surridge.

7. In March 1954, the Secretary of State, after consulting with the Chancellor of the Exchequer, stated that Her Majesty's Government agreed that the Protectorate should receive sufficient assistance for as long as might be necessary to enable adequate standards of administration to be maintained. The Protectorate was to use up its surplus balances in 1954/1955 and in 1955/1956, and thereafter Her Majesty's Government would assist with a total of grants-in-aid estimated at about £1½ million, to carry out whatever programme was determined upon.

8. Following up the Resident Commissioner's estimate of requirements, Sir Alexander Symon visited the High Commission Territories between March and June of 1954 to make a detailed survey of development needs of the Territories. His final report in respect of the Protectorate recommended for the five-year period 1955/1960 -

(a) Grant-in-aid	£1,050,000
(b) Old and New Colonial Development and Welfare Grants	£2,538,000 (£2,370,848 new money)
(c) Loans	£ 414,500

9. Towards the end of 1954, while the Report was being considered, very drastic cuts were made in the amount of Colonial Development and Welfare funds which it was hoped

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would be made available to the Territories in terms of the report, and the £2,370,848 new money required by the Protectorate was cut to £936,000. As a result, and since the Secretary of State had approved the Report, subject to the availability of funds, it was expected that the balance of what had, by Sir Alexander Symon, been thought Colonial Development and Welfare worthy, should be transferred to the ordinary Estimates and paid for from grant-in-aid.

10. At the request of the Secretary of State, a comprehensive plan of development within the framework of the Symon Report and including the schemes cut out from Colonial Development and Welfare grants was prepared and sent to the Secretary of State in December 1955 with the draft Estimates for 1956/1957.

11. In April 1956, after study of the plan and Estimates, the Secretary of State decided that much of the proposed expenditure was in fact Colonial Development and Welfare worthy, and should be financed from the Colonial Development and Welfare funds. It was, however, stated that in the special circumstances of the Protectorate recurrent expenditure on Colonial Development and Welfare Schemes could be taken on to the budget on a tapering basis, so releasing additional funds to meet expenditure on Colonial Development and Welfare worthy items cut out of the Estimates.

12. The Protectorate grant-in-aid was also cut down from the estimated requirement of £2½ million up to 1960 to £1½ million (cf. paragraph 7), but it was stated that when the 1959/1960 Estimates were considered, consideration would be given to some increase in the total grant.

13. The Protectorate thus commenced its four-year development period in 1956/1957 with the sanction of a grant-in-aid of £1½ million and of Colonial Development and Welfare expenditure of £1 million, making a grand total of £2½ million. A loan programme of £923,000 was also approved, subject to the need to adjust timings of the loan programmes of all three Territories to correspond with the limited loan finances available. Subsequently, in August 1957, £404,000 (less £50,000 held back by the High Commissioner) was allocated from Colonial Development and Welfare Central Reserve to the Protectorate.

14. Details of revenue and expenditure past and future, and of expenditure from Colonial Development and Welfare and loan funds will be found in the Appendices.

15. It was anticipated in respect of 1959/1960, even after the most vigorous pruning of the Estimates, and the elimination of all but minor and essential increases of staff, vehicles and services, that the minimum grant-in-aid required, despite an increase of £138,000 in revenue, would be £650,000. This would have meant an increase of £330,000 over the £1½ million formerly approved. Revised estimates for the year, however, show that, despite some anticipated under-expenditure because of failure to recruit staff, and for economy reasons, and having regard to a general revenue balance of £65,000 brought forward from 1958/1959, grant-in-aid required is likely to be some £20,000 more than that estimated. The total required is likely to be approximately £670,000, or £350,000 more than the £1½ million formerly approved. The total increase is due to inevitable increases of staff and services due to the development of the territory, to the transfer to the budget on the tapering principle of recurrent Colonial Development and Welfare expenditure, and to the 1958/1959 Surridge salaries revision.

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16. In 1960/1961 it is estimated ~~that expenditure~~ will increase by £380,000 over the approved estimate of expenditure for 1959/1960. This large increase is due to the normal creep of approximately 5%, amounting to £95,000 and, in addition, to the salaries revision, to the increased contribution to the Tsetse and Geological Survey Schemes, to the restoration of certain economy cuts made in 1959/1960 which have seriously impaired the efficiency of the departments and to the effort now being made to balance and consolidate the work achieved under the 1955/1960 Development Plan. The 1960/1961 estimates, if approved, will necessitate an increase in the grant-in-aid to £913,521, but economies can only be achieved by reducing provision for staffing which is in any case minimal for the needs of the Territory, or by reducing the monies provided to enable the staff to do their work in the Territory, which is no more than barely adequate. If this Grant is approved the Territory will have gone from a balanced budget in 1955/1956 to a grant-in-aid of just under £1 million in 1960/1961.

17. A committee of the Joint Advisory Council has recently been established to give full consideration with Government officers to the means of raising increased revenue from local sources. With the possibility of such increases and with the boost to the economy of the Protectorate provided by the 1955/1960 development work, it is expected that annual increases of revenue will be of the order of £100,000 during the next four years.

18. Normal increases in expenditure of approximately 5% must be expected to continue in a large, backward but developing Territory like the Bechuanaland Protectorate, but if these average approximately £100,000 a year, as is expected, they will be roughly covered by the revenue increases. Over and above that there will be increases totalling approximately £65,000 a year if the 1960/1964 Development Plan is approved, due to the transfer to the budget of the recurrent expenditure from new Colonial Development and Welfare Schemes and to increased loan charges. It is possible but not certain that increased revenue may be found to offset some of these increases but failing that it is estimated that the annual Grant-in-Aid will need to be increased at an average rate of approximately £65,000 a year during the three years 1961/1962 to 1963/1964. The widening of the gap will, however, be increased if the recommendations of the Economic Survey Mission are approved.

THE LIVESTOCK INDUSTRY AND VETERINARY DEVELOPMENT.

19. The economy of the Territory depends almost entirely on its livestock industry, as is shown by the following figures of exports:-

	1956 £	1957 * £	1958 * £
Carcases	1,555,000	1,369,000	1,474,000
Live Cattle	73,000	159,000	167,000
⁄ Hides	218,000	172,000	163,000
Abattoir by-products	192,000	161,000	164,000
⁄ Butter and Butterfat	96,000	87,000	79,000
Total	2,134,000	1,948,000	2,047,000
Total Exports of all kinds	2,888,000	2,412,000	2,585,000

* Figures for 1957 and 1958 were affected by export restrictions owing to Foot and Mouth disease.

⁄ See also Sections 7 (Hides) and 6 (Butter and Butterfat).

20. Sir Alexander Symon, in the Report referred to earlier concluded that minerals offered the only hope of the Protectorate becoming self supporting, but that it would be unwise to anticipate any early or spectacular development in this field. Thus development of the land, though costly and slow, was accepted as the surest way of improving the economy and in particular Sir Alexander recommended that every effort should be made to expand the cattle population of the Territory by the development of new water supplies. An amount of approximately £500,000 was accordingly allocated to the Territory for the development of water supplies in the period 1955 - 1960 (out of total Colonial Development and Welfare development grants of £1,300,000) and the greater part of this sum is being spent in African areas where 90% of the cattle are produced. (See Section 5.) To assist in expanding the cattle population large ranches had earlier been granted to the Colonial Development Corporation in the Northern Protectorate and on the Molopo (see Section 8) and subsequently schemes for the settlement of a limited number of European ranchers on Crown Lands on the Molopo and at Ghanzi have been approved (see Section 10).

21. The cattle population of the Territory was about 950,000 in 1946. At the end of 1959 this figure had increased to over 1,300,000. In the past heavy losses have been incurred from droughts and disease. Increased water supplies and improved disease control measures resulting from the expansion of the Veterinary Department during the last five years should give the industry greater security in future.

22. The increase in the cattle population has not been directly reflected in increased exports. The main reasons for this are -

(1) the attitude of the Africans towards their cattle and their reluctance to sell except when forced to do so to obtain cash for immediate necessities;

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(2) the traditional markets in Central and Southern Africa have proved inadequate for the Territory's total production, particularly in the flush season when the cattle are available for export.

Mainly for these reasons total annual export figures remained virtually static during the ten years 1949 to 1958, although in the same period the cattle population increased by over 300,000.

23. It is desirable that annual exports should be increased and that animals should be marketed at an earlier age. This would relieve the heavy pressure on the grazing near the available water supplies and improve the condition both of the cattle marketed and of the grazing. The provision of inducements to persuade the African to increase sales and thereby exploit more fully the potential of the industry is at present receiving attention as the economy of the Territory and the future of the industry depend so heavily upon it. To justify such inducements it is however necessary to obtain markets for more cattle in the flush season, and this was largely achieved by the conclusion of a contract to sell 30,000 carcases between July 1958 and September 1959 to Israel and other overseas markets. The total exports for the year 1959 were 97,000; greatly in excess of the total for any previous year. In April, and again in May, 1959, Lobatsi Abattoir processed over 10,000 cattle, and demonstrated that it could handle most of the cattle offered during those months. The need for a second abattoir is not yet proved therefore. A project which has been considered from time to time is that of a canning factory to be erected as an adjunct either to the Lobatsi Abattoir or to a new abattoir in the Northern Protectorate but there appears to be no urgency in providing this new form of outlet for Protectorate beef because of the present satisfactory overseas market for boned frozen beef.

24. The Lobatsi Abattoir is a Colonial Development Corporation project and has a virtual monopoly of export of slaughtered cattle. The existence of these monopolistic rights and dissatisfaction with prices paid by the Abattoir have led to complaints from producers, while the Colonial Development Corporation have had to contend with unexpected difficulties. The Colonial Development Corporation are anxious that there should be some form of producer participation in the Abattoir, and a scheme for the formation of a company with Government and producer participation but with the Colonial Development Corporation at present retaining control, was put forward in the hope that it might lead to greater co-operation and understanding between the Colonial Development Corporation, producers and Government. The scheme has received general support and now only awaits the completion of legal drafting before it is brought into effect.

25. With Colonial Development and Welfare fund grants during 1955 - 1960 the professional and other staff of the Veterinary Department has been increased to a more adequate level; a school for training African Veterinary Assistants and Cattle Guards has been built at Ramathlabama, and an investigational centre near the school. The school will enable African employees to be trained not only in disease control methods but also in simple animal husbandry and in future they will be able to disseminate the lessons they have learned on a broader front than has been possible in the past.

26. One of the major tasks of the Veterinary Department, apart from dealing with actual outbreaks of Foot and Mouth Disease, is to ensure that when such outbreaks occur it is not

/necessary

necessary to stop cattle movements over the whole Territory, or large portions of it, which seriously reduces the export of slaughtered cattle on which the economy so largely depends. To comply with Union requirements, several disease control fences have been erected and more are needed so that outbreaks can be localised.

SECTION 4.

MINERAL DEVELOPMENT AND THE GEOLOGICAL SURVEY.

27. Systematic geological survey work started in 1943 when Mr. E. J. Wayland, C.B.E., was appointed Geologist to the Public Works Department to advise on water development prospects in the Territory and he reported on various mineral occurrences which he located during the course of this work. The Geological Survey was founded as a separate Department in 1948 with Mr. Wayland as first Director. The primary function of the Department during the first five years, up to 1953, was mineral exploration. During this period a number of mineral occurrences were investigated, the most important being the iron ore occurrence at Naka la Phala in the Bamangwato Reserve, the Moshaneng asbestos deposit, the Bushman Mine copper and nickel-copper mineralization in the Magogaphate area. As the result of the work carried out by the Department mining development commenced at Moshaneng in 1950. The Geological Survey located a kyanite deposit in the Tati Concession in 1950 and mining commenced there in 1951. Since 1950 the Geological Survey has undertaken the detailed examination of the potential coalfield areas of the Protectorate and this work is still in progress.

28. In 1954 a basic reconnaissance geological mapping programme to a scale of 1:125,000 was commenced and in 1956 the Department was expanded to allow for the establishment of a hydrogeological section. A knowledge of the basic geology and geological structure of the Protectorate is fundamental to the correct assessment of the mineral potential of the Territory and following the investigation of the more promising and better known mineral occurrences the Geological Survey has been placing emphasis on the acquisition of this knowledge. In addition, in a semi-arid Territory a Geological Survey has an important role to play in the development of underground water resources and it has been necessary to employ available staff on this work as well as on basic geological mapping. Staff shortages have affected the amount of work which has been possible on direct mineral survey. It has, however, been possible to continue the exploration of the potential coalfield areas and to undertake a preliminary examination of the evaporite deposits in the Makarikari region.

29. Active mining is now confined to manganese and asbestos. A little gold is still produced, but no more than one or two single exploiter enterprises remain of the many small workings in the Tati District, of which the Monarch Mine was the largest. Present activities have been largely re-cyaniding of old dumps.

30. Manganese is worked at Kgakgwe, near Kanye, in the Bangwaketse Reserve, and in the Bamalete Reserve. The Kgakgwe deposit, which is worked by Marline, a Bechuanaland Protectorate subsidiary of Marble Lime Ltd., was discovered by the Geological Survey. Some 200 men are employed and the Company propose to increase the labour force by using redundant workers from the asbestos mine (see paragraph 31). In the Bamalete Reserve manganese has been worked by the B.P. Mining Corporation for two years. About 150 men are employed. By the end of November 1959

production from both mines totalled 30,589 short tons, of which 18,900 tons valued at £131,977 had been exported.

31. Asbestos was the most valuable mineral export in 1958, when 1,734 short tons, worth £139,911, were exported. Unfortunately, Russia has recently off-loaded large quantities of asbestos on the European market which has resulted in a fall in the price of asbestos, particularly for short fibre. The bulk of the production at Moshaneng is short fibre and the price of this has dropped from £120-130 a ton to about £75 a ton. To prevent the mine being placed completely on a care and maintenance basis the Company have had to take drastic steps to reduce their working costs for the production of asbestos. This has been achieved by retrenching staff by about one-third and selective mining.

32. There has however recently been a welcome interest by large mining concerns in the mineral possibilities of the Territory and Crown Grants for prospecting have been issued, or are under consideration, as follows:-

A. Minerals excluding diamonds:

Bakgatla Reserve	Marlime Company
Bamalete Reserve	B.P. Mining Corporation
Bamangwato Reserve	Rhodesian Selection Trust.
Bangwaketse Reserve	Marlime Company
Batawana Reserve (excluding north-eastern portion)	Johannesburg Consolidated Investment
Crown Lands (an area south of Bangwaketse Reserve)	O. L. Papendorf

B. Diamonds:

Batawana Reserve	Johannesburg Consolidated Investment
Bamangwato Reserve	Consolidated African Selection Trust
All southern Reserves and large portion of Crown Lands	Anglo-American Corporation

There are also various diamond concessions to independent prospectors, mainly in Crown Lands.

33. Mining rights in the Tati District are owned by the Tati Company and in the Tuli, Gaberones, and Lobatsi Blocks by the British South Africa Company. The Anglo-American Corporation are prospecting the British South Africa Company areas.

34. The Bechuanaland Protectorate possesses vast resources of coal and the more important coalfield areas investigated are favourably situated near to the railway line in the Eastern Protectorate. The coals investigated have all been low to medium-grade bituminous coals of good steam raising quality and no coals of coking quality have been located. The chief factor preventing the development of the coal is the absence of secondary industries.

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and hence local markets, in the Territory. How soon the coal can be used depends entirely on the development or finding of suitable markets, but the coal in the Protectorate constitutes a large and important potential mineral resource even if use cannot be made of it in the immediate future.

35. In the central Bamangwato Reserve drilling for coal was carried out as early as 1897, but after 1900 little attention appears to have been paid to the coal although sporadic references continued to be made to its potential. The Geological Survey commenced a detailed examination of coal resources in 1950 and has carried out core drilling on all the known major coalfield areas. These are the Debeeti-Mamabule area in the southern Bamangwato Reserve, the Morepule coalfield area in the central Bamangwato Reserve and the Mookane area in the northern Bamangwato Reserve. The results of the examination are as follows:-

Mamabule - in the limited area investigated of 3 square miles reserves are estimated at 90,000,000 tons. The seams extend outside the investigated area.

Morapule - proved reserves 150,000,000 tons.

Mookane - seams range up to 6 feet in thickness.

36. According to the information at present available to the Geological Survey, the occurrences of other minerals in the Protectorate are as follows:-

Silver - minor amounts as by-product of gold mining.

Platinum - traces in a nickel occurrence at Magogaphate.

Bismuth - no occurrences warranting attention.

Chromite - one occurrence of no economic interest.

Copper - a number of occurrences are known, the major one being at Bushman Mine which was worked and produced a limited amount of copper early in the century.

Iron - two or three occurrences have been identified but appear to be limited.

Lead - none of the many occurrences known appears to be of economic importance.

Nickel - occurrence at Magogaphate has been investigated by the Geological Survey, but the work undertaken was insufficient to assess the true economic significance. Other minor occurrences are known.

Tungsten - occurrences are known but do not appear to be of economical interest.

Zinc - minor occurrences only.

Salt - Salt and brines are found in the Makarikari region and very recently interest in the exploitation of the deposits has been shown by a large mining concern.

/Other non-metallic minerals

Other non-metallic minerals

limestone is relatively common and a number of other non-metallic minerals are known, mainly apparently in uneconomic quantities - fluorspar, garnet, glass sands, graphite, gypsum, kaolin, lithium, phosphates, vermiculite, and radio-active minerals. Kyanite was located by the Geological Survey in 1950 near Francistown and worked for seven years, producing 10,000 short tons valued at £95,000.

SECTION 5.

WATER DEVELOPMENT.

37. With the exception of parts of the Ghanzi area and the remote Okavango Swamps, water supplies are inadequate almost everywhere in the Territory. As a rule conditions are not suitable for major surface conservation schemes, although there are important exceptions. A dam has been constructed on the Notwani River to supply the railways and eventually the township of Gaberones, and the construction of a dam at Mahalapye, to supply the town and railway, is under consideration. The leading citrus farmer in the Tuli Block irrigates his land from a dam on the Limpopo River.

38. In the main, however, reliance has to be placed on boreholes, and the difficulty in siting boreholes has led to the Geological Survey being expanded to allow at least two geologists to be assigned to underground water supply work. The Survey has compiled and tabulated much geological and hydrological information and is now using a variety of techniques to locate possible sources of supply.

39. During the past three years the Geological Survey has been responsible for site selection for a major underground water development scheme in the Eastern Protectorate as well as certain minor development schemes which are in progress in the North-Western Protectorate and also in the South-Western desert areas. Assistance has also been rendered throughout to villages and townships, to the Rhodesia Railways and the Geological Survey has recently been responsible for drilling for the cattle export route in the central Kalahari area.

40. The major underground water development scheme in the Eastern Protectorate was carried out by contract drilling and 65,477 feet was completed in 238 boreholes, of which 166 were successful. This represents a success ratio of 70%. The drilling has been confined to the four major Reserves and the programme is designed primarily to provide new watering points in undeveloped areas, and thus increase the cattle carrying capacity and alleviate overstocking, to provide water points in agricultural land areas and to improve existing village supplies. The new areas developed have been mainly marginal Kalahari areas which have previously been either waterless or where considerable difficulty had been experienced in locating potable supplies.

41. The Geological Survey has also located supplies at many other points in the Territory. Of particular interest is the work at Lobatsi where at present a total of some 85,000,000 gallons a

/year

year is used by the three main consumers, the Colonial Development Corporation Abattoir, the Rhodesia Railways and Government. A small part of this supply is provided by the railway dam but the greater portion comes from borehole supplies. These supplies are at present being pumped to the limit of their capacity and the Geological Survey has recently developed a new area some 3 miles to the North-East of Lobatsi where several high yielding boreholes have been drilled. The most successful borehole showed a yield in excess of 7,000 g.p.h. over a 72 hour test period.

42. In all, since the establishment of a hydrogeological section in April, 1956, to 31st December, 1959, 370 boreholes have been drilled on sites selected by the Geological Survey and of these 259 boreholes have been successful, representing a success ratio of 71% over all areas. The total number of boreholes drilled between 1st April, 1955, and 31st December, 1959, both Departmentally and by contract was 546 totalling 143,168 feet. Of these 353 were successful, resulting in a total tested potential yield of 327,633 g.p.h. or an average yield of over 920 g.p.h. per borehole. This total potential yield is a minimum figure, as in a number of cases the test pumps were such that the borehole supplies could not be tested to their full capacity.

SECTION 6.

AGRICULTURE AND FORESTRY.

43. The uncertain and small rainfall hampers agriculture, but as a rule exports of agricultural produce are possible. The majority of agricultural lands are on the Eastern side of the Territory. It is estimated that potential arable land totals 8 million acres, of which about 5% is developed. The existing tribal systems are not conducive to good farming methods owing to the concentration of people in large headquarters villages, which results in remote control of farming operations and leaves most of the Territory's cattle in the hands of herd boys. The seasonal movement of the people to the lands is often delayed, which results in loss of time for agricultural operations. A further point limiting agricultural advancement is the shortage of permanent water points in many lands' areas - in certain cases farmers can at present only move to their lands when surface dams and pans have received water. This limiting factor is being mitigated by the drilling of boreholes in these areas under Colonial Development and Welfare Schemes. There is a trend towards an economy based on money instead of on barter and with the development of this trend more interest will be shown in quality of produce and the realisation that land is an economic factor would become evident.

44. Soil conservation work on a limited scale has been carried out. Agriculture plays a more important part in the smaller Reserves and here loss of fertility of the land and the consequent breaking down of the soil structure is leading to increased soil erosion. Active soil conservation and reclamation measures are required to maintain optimum sustained production. The improvement of farming practices is being slowly achieved by extension work. Mutual confidence between the extension worker and the farmer is built up by personal contact between the two. This is done by careful selection of Agricultural Demonstrators and their close supervision, and by avoiding, as far as possible, transferring workers from one district to another. The number of pupil farmers to each demonstrator is limited to enable him to get to know them intimately and to become their friend and adviser. The Senior Service Extension Officer is also expected to know all the pupil

/farmers

farmers in his district and here again continuity of staff is most important. The extension programme is discussed at district and regional levels, giving the extension workers a chance to criticise the extension system, and thereby confidence in the programme is built up. As the technical aspects have been investigated and proved at the experimental stations, the field worker is sure that the advice he is giving has been proved and is sound.

45. The demonstration plot method with personal instruction by Agricultural Demonstrators backed up by Senior Service Extension Officers has been found successful. Constant instruction and encouragement is given to these farmers, and as the general level of crop husbandry is low, they reap very good crops compared to the normal farmer, with the result that the monetary gain is significant. The supply of farming requisites at cost price also encourages them, as well as show prizes, prizes for the best plots, and finally the prestige of being made a "Master of Tillage". These "Masters of Tillage" are often called upon to address farmers' meetings, etc., which adds to their prestige.

46. The principal crops are:-

(i) Kaffir Corn and Beans: Kaffir corn and beans, notably improved in type and yield during recent years by the work of the Agricultural Department, account in an average year for some £300,000 of the Territory's exports (Kaffir corn £200,000, beans £100,000). Cultivators are widely spread over the Territory and it has been found that storekeepers who purchase any amount, however small, provide the best method of collecting for export. Distances and the comparative smallness of sale lots has so far precluded the practicability of co-operative organisations.

(ii) Butter and Butterfat: Butterfat from the North-Eastern parts of the Territory is sent to the butter factory at Francistown, which produces an average of £50,000 worth of butter per annum. This industry is of incalculable value to the smaller farmers recently settled in the Francistown District. It has given no trouble to Government and has required virtually no assistance during the many years during which it has been established. From the Lobatsi District butterfat is sent to the Mafeking Creamery, and from Ghanzi to the Creamery at Gobabis in South West Africa. Ghanzi cream export has, however, suffered greatly in the past two years from the area being closed for long periods owing to the proximity of Foot and Mouth infections in Nganiland.

(iii) Citrus: Very good oranges are grown by the main grower in the Tuli Block. He is exporting at present over 20,000 pockets of 30 lbs. each, which, with other smaller growers' produce, are mainly offered on the Bulawayo market. If a big oversea market could be found, production could be stepped up within five years to almost any figure for which markets could be guaranteed.

(iv) Tobacco: The position of tobacco is similar to that of citrus. Tobacco grown in the Tuli Block, in addition to being exported to Mafeking and Vryburg areas of the Union, has during recent years captured at least one-third of the considerable internal African market previously supplied by import. There is some difficulty in marketing in the Union owing to the position of Union co-operatives in the trade there, while the quality of tobacco offered on the Salisbury floors is so high that Tuli Block tobacco, cured with only moderate expertise, would not be worth sending.

/(v) Ground Nuts:

(v) Ground Nuts: A small ground nut crop variable in quantity is produced annually in the Territory. It is marketed under the Union Oil Seeds Board, which has equalising fund arrangements.

47. There are exploitable areas of timber - Mukwa and Mukusi (Rhodesian Teak) - in the Chobe District at the North-East corner of the Territory. A timber exploiting and saw-milling company operated for approximately 15 years up to 1956. A good deal of both these types of timber was taken out, but the company was inefficiently run and wasteful in its exploitation, and it was allowed to go into liquidation. Since then various requests for timber concessions have been received, but on the advice of the Conservator of Forests for Southern Rhodesia the result of a full re-survey now being undertaken by a qualified officer is awaited so that timber areas can be put out to tender in a way which will produce the highest royalty to Government from specialist timber concerns accustomed to working to cutting regulations. It has been emphasised by the Conservator that the Territory's forests represent one of the very few considerable untouched resources of both these timbers and that Government should be in no hurry to give concessions. The engagement of a Forest Officer is the first necessity.

SECTION 7.

MINOR INDUSTRIES.

48. Hides: Hides to an average value of nearly £200,000 are exported annually. Of this about one half comes from the Abattoir, the rest being animals which have been killed or died locally. The Veterinary Department has endeavoured to improve the grade of hides during recent years by restricting export licences to four exporters who have proper facilities for treating hides and for storage.

49. Bonemeal Manufacture: There is a small bonemeal factory at Francistown which supplies much of the Territory's needs and also provides some exports. Another small factory may be set up in Ngamiland with the main object of supplying the European ranching community at Ghanzi.

50. Crocodile Skins: Approximately 4,000 crocodile skins, representing at least £25,000 in value, have recently been exported annually from the Territory, the bulk of these being obtained from Ngamiland where a royalty of £1 a head is paid to the Tribe, and the others being obtained from such Chobe waters as fall on the Bechuanaland side of the international boundary. The main exporter has very good facilities for preparing his skins before export. An annual quota is set for the various areas and the balance of nature watched.

51. Fish: A dried fish industry was started some eighteen months ago in Ngamiland, and met with many difficulties in its early months, but finally was producing a most successful product, which found an unlimited market in the Federation. Unfortunately, the owner became insolvent through his other activities. Despite the keenness of purchasers in the Federation, there seems nobody able and willing to continue the business of catching and drying in Ngamiland. Proposals for a similar industry on the Chobe River are under consideration.

52. Soap: A soap factory has been operating for over a year on tallow obtained from the Lobatsi Abattoir. It is capable of

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producing 4,000 cases a month, valued at approximately £12,000. Production is already approaching 3,000 cases a month. The soap (toilet and bar) is exported to the Federation and the Union, as well as being used in the Bechuanaland Protectorate. It has its best market in the Federation, where the soap enters duty free under the existing Customs Agreement. Some fifty Africans are employed.

SECTION 8.

THE COLONIAL DEVELOPMENT CORPORATION RANCHES.

53. In 1949/1950 the Colonial Development Corporation negotiated with Government to lease two large ranches on Crown Lands, one in the North (9,000 square miles) and the other on the Molopo River (3,125 square miles).

54. The original scheme for the Northern ranch envisaged the gradual development of the area in sections over 18 years with the intention of building up a herd of 357,000 head of cattle in a largely uninhabited part of the Territory. In addition, an agricultural project to grow maize and cattle fodders was undertaken at Pandamatenga at the Northern edge of the ranch adjoining the border of the Wankie Game Reserve in Southern Rhodesia.

55. Heavy losses were however incurred, and in 1954 the original intention of developing a really large ranch, which through its exports of cattle might have made a substantial difference to the Territory's economy, was drastically revised and the Corporation decided to confine development to three limited areas, one at Pandamatenga, one at Bushman Pits and one at Nata. Of these areas, the one at Bushman Pits, which had been developed with fencing and water, was sub-leased to the Ngamiland Cattle Exporters Association, while the other two were retained by the Corporation for their own purposes. In 1955 agricultural production was abandoned entirely.

56. The advantage of the Bushman Pits ranch to the Ngamiland traders is that it gives them an area of good grazing and water some way along the route to their normal market in Northern Rhodesia and away from the Tsetse Fly and overgrazed pastures of Ngamiland. Cattle grow out at Bushman Pits up to 850 lb. weight and are then purchased by the Corporation for final fattening at Pandamatenga before delivery to market in the Federation.

57. The Molopo ranch was originally offered to the Colonial Development Corporation as a holding ground to provide a reservoir on which the Abattoir could draw in the scarce season. The Corporation negotiated for the lease of this ranch on the assumption that mature stock not required for immediate slaughter could be maintained on it in good condition and that cattle bought in poor condition, or before maturity, could be grown out to slaughterable weight. It was on these assumptions that the Corporation in the early negotiations relating to their monopoly of export undertook to buy all saleable cattle as and when offered, thereby offering to the producer greater security in marketing than he had previously enjoyed. By 1953, after some experience of ranching on the Molopo, the Corporation came to the conclusion that the area was unsuitable as a holding ground for these purposes as cattle from other parts of the Territory rapidly lost condition after transfer to the ranch. They represented to Government that the agreement, if persisted in, would involve them in such heavy losses as to jeopardise the success of the whole Abattoir project and sought release from their undertaking to buy all saleable cattle offered.

/58. In

58. In 1954 the Corporation decided that they could breed successfully themselves on the Eastern part, nearest to the Abattoir, and they proposed to Government that a settlement scheme for European ranchers should be started in the Western area bordering the Molopo River (see Section 9).

SECTION 9.

SETTLEMENT SCHEMES, MOLOPO AND GHANZI.

59. The Molopo settlement scheme is a comparatively small project under which 13 farms have been surveyed on land adjoining the Molopo River formerly leased by the Colonial Development Corporation. All the farms were promptly sold, mainly on instalment terms. The total proceeds (about £250,000 spread over 5 years) will be credited to a fund to provide loans for agricultural development.

60. The principle feature of the Ghanzi District is a block of large cattle farms situated on a limestone ridge running North-Easterly from the South West Africa border to Ngamiland. There is ample water in the limestone. It was originally settled in 1898 as a counter to German expansion, but few of the pioneers remained and the picture recently was that there were three substantial ranchers owning several farms each, a few more freeholders, leaseholders (some of whom also owned freeholds) and a number of squatters who hoped to obtain farms. The farms on the limestone ridge constitute a European area, and, apart from the mainly nomadic Bushmen, there are no inhabitants of the areas adjacent to the existing farms. It is therefore an ideal centre for introduction of additional European capital which is very necessary to bring the economy of the district on to a sounder basis.

61. A scheme was accordingly devised to provide freehold titles for the existing leaseholders, and to sell farms to newcomers of substance, and it was originally hoped to lay out a total of 200 farms. Until recently none of the farms had been surveyed, but a survey of the existing block of 120 farms (3 of which form the township and commonage), and 49 additional farms on the perimeter of the block has now been made. The difficulty in extending the area to complete the 200 farms is that the existing survey has covered, and in places extended beyond, the limestone ridge to the sand-veld where water prospects are not encouraging. Test drillings are therefore being made before further surveying takes place of land in the sand-veld.

62. Applications for farms from local residents (leaseholders, squatters, etc.) have already been considered and allocations made. The remaining farms will be allocated shortly. Many applications have been received for the farms and there should be no difficulty in selling them. The total proceeds will be about £400,000, but receipts will be agreed over 14 years as most of the local farmers are not in a position to pay more rapidly.

SECTION 10.

COMMUNICATIONS.

63. The main lines of communication are the railway and main road running roughly parallel to each other along the Eastern side of the Territory from Ramathlabama (near Mafeking) to Ramaquabane (between Francistown and Bulawayo). Apart from this, communications

/are

vegetation of the area and of the habitat requirements in Ngamiland of the particular species of tsetse concerned (Glossina morsitans). Although the fly was advancing on both the Western (i.e. Tsau - Nokaneng - Gomare) and the Maun "fronts" it was impossible until 1958 to do more than concentrate on protecting Maun. At the beginning of 1958 operations were extended to the Western front but work was hampered owing to the Tsetse Fly Control Officer contracting sleeping sickness in March and being unable to resume full duties until June.

73. In addition to Ngamiland, Tsetse Fly is now becoming a threat to villages in the Chobe District and control measures are required there also.

74. Expenditure at present is about £50,000 a year and more will be required in the future.

SECTION 12.

MEDICAL.

75. The total number of beds available in all hospitals and health centres at the end of 1958 was 31 for Europeans and 563 for Africans, with, in addition, 147 cots. Of this accommodation Government provided 28 European beds, 335 African beds and 93 cots. Out-patient attendances approached 500,000 and hospital admissions nearly 15,000.

76. In addition to hospitals and health centres, Government maintains 35 out-station dispensaries, eight of which have resident African dispensers, the remaining 27 being visited at regular intervals by Government Medical Officers. The Missions maintain 26 similar dispensaries which are visited at regular intervals, ranging from twice weekly to once in two months. The total of 61 dispensaries now forms a network which covers most of the inhabited parts of the Territory.

77. Recent assistance from Colonial Development and Welfare funds has been directed towards erection of health centres, a number of tuberculosis blocks (which are urgently needed), extensions to hospitals, supply of X-ray units, and additional staff in both the curative and the preventive divisions of the Medical Department. When all the tuberculosis blocks are completed there will be a total of 244 beds for the treatment of tuberculosis patients.

SECTION 13.

EDUCATION.

78. For African education there are approximately 170 primary schools, 3 junior secondary day schools, 2 secondary boarding schools and a Government teacher training college. Of the 170 primary schools, 150 are controlled and financed by Tribal School and Finance Committees, 12 situated in Crown Lands are conducted by Government and the remaining 6 are Mission schools. The total primary enrolment is 33,834 pupils; an increase of 13,359 over the past 4 years.

79. Tribal School Committees comprise nominees of the District Administration and of the Chief; the African tribal representatives are invariably in the majority. This system ensures genuine local interest in primary education. As a result

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of limited tribal financial resources and of the sudden increase in enrolment, a considerable back-log of building requires immediate attention; classes are too large and equipment is sparse; over 50% of teachers are unqualified and the salary scales of qualified teachers are very low.

80. The Protectorate depended almost entirely on neighbouring territories for secondary and vocational education and teacher training until five years ago when the Government of the Union of South Africa banned extra-territorial non-European pupils in its schools. Since then two full secondary boarding schools, three junior secondary schools and a new Government teacher training college have been established in the Protectorate. A trades school is to be built in the current year and another secondary boarding school will be erected by the London Mission Society soon. Further preparation is necessary to cope with the surge in primary school enrolment before that surge reaches the secondary schools.

81. There are 9 European schools with 400 pupils, of which three are boarding schools. The European population is growing fast and an extension of primary education facilities, particularly at Ghanzi, is urgently needed. The provision of European secondary education is not contemplated as the population does not justify such a development yet. Neighbouring territories are generous in offering places in their secondary schools and it is considered advantageous for pupils to be educated at the high school level in a wider and more differentiated environment.

82. Most Eurafrican children attend tribal schools, but the 5 specifically Coloured schools have an enrolment of 275 pupils. A boarding school for Eurafrican children is being erected at the isolated settlement of Kanagas, near Ghanzi, this year.

83. Funds provided under Colonial Development and Welfare Schemes have been or are being used for building and equipping the Teacher Training College, for extending the buildings at the African secondary school at Moeng and at the European boarding schools at Lobatsi and Ghanzi; for the erection and equipment of a Trades School, for the improvement of primary education in the Bamangwato Reserve, for a grant-in-aid to the London Mission Society towards building a secondary boarding school, and on additional staff and other recurrent expenses.

SECTION 14.

ELECTRICITY.

84. Electricity supplies exist at Francistown and Lobatsi. A few Government houses at Maun are supplied by the Union meteorological station there. The Lobatsi plant is at the Abattoir, and its output is primarily for abattoir purposes. It is inadequate to supply the whole township and most houses remain dependent on lamps. At Francistown power is supplied by a plant owned by the Tati Company Limited. The ways and means of increasing electricity supplies at Francistown and Lobatsi were examined in November, 1956, by the Federal Electricity Supply Commission and a detailed report was issued in February, 1957. The Tati Company are making some improvements to the Francistown supply but the position at Lobatsi remains unsatisfactory.

/SECTION 15.

SECTION 15.

HOUSING.

85. In his report Sir Alexander Symon commented on the heavy back-log of building work on offices and houses throughout the Territory and remarked in particular on the inadequate housing for Junior Service officers. Since then much has been, and is being, done to provide better accommodation, (vide Appendix C) but it is estimated that at the end of the financial year 1959/1960 there will still be requirements for 180 senior and approximately 700 junior type quarters to meet present and anticipated future needs during 1960 - 1964.

SECTION 16.

A. THE OKAVANGO AREA.

86. The Okavango Swamps, with their large quantities of water running into the sand, or evaporating, have exercised a fascination on many people who have seen in them some solution to the economic difficulties of the Territory. The projects which have been put forward at various times range from intensive agriculture to grandiose schemes for bringing Okavango water further into the Territory. Until more is known of the delta soils, the agricultural potentialities cannot be accurately assessed. Sir Alexander Symon commented, "There are other important factors which militate against profitable development at this stage, viz. lack of communications, a limited population and the unhealthiness of the Delta". It would no doubt be possible to clear part of the swamps and, by natural flow, canals, or pumping, bring water further into the Territory. But such measures would appear to be beyond the Protectorate's resources.

B. THE TATI DISTRICT.

87. The Tati District is owned by the Tati Company who are developing the township of Francistown. The remainder of the district consists largely of small farms, many of which under present conditions are not very profitable undertakings. It has been suggested that some of the funds provided under Water Development should be devoted to improving the economy of the district by making the farms into a conservation area and by assisting in the construction of dams, weirs, etc., through provision of specifications and the loan of Government plant and machinery at a charge for labour and fuel, etc. only.

C. THE TULI BLOCK.

88. The Tuli Block consists of a strip of European-owned farms bordering the Limpopo River. In the Northern part the farms are largely used as sporting estates, but elsewhere ranching and agriculture are practised on a large and efficient scale. The major requirements of the Block are improved communications with the rest of the Territory. The extension of the telephone service to the Block is planned; there are already two or three good roads from the Territory's main road to Union centres which cross a few miles of the Block, but improvement of the roads linking the farms with the main roads is necessary.

PART III.

PROPOSALS FOR DEVELOPMENT 1960/1964.

SECTION 17.

FORECAST OF REVENUE AND EXPENDITURE AND PROPOSALS FOR FINANCING DEVELOPMENT.

89. An estimate of revenue and expenditure during the period 1960/1964 is attached as Appendix D (1) and (2). As will be seen, during that period expenditure is expected to exceed revenue by over £4 million.

90. The total amount required for development during 1960/1964 is about £3 million. Detailed plans have been prepared for the years 1960/1961, 1961/1962, and 1962/1963 (see Appendices E, F, G and H) showing a total expenditure as follows:-

	£	£
(i) Territorial C.D. & W. Grant	1,439,749	1,439,749
Less contributions from Territorial revenues	558,733	
Net C.D. & W.	£ 881,016	
(ii) Loan Funds		1,069,000
Total 1960/1963		£2,508,749

(These figures do not take account of the cost of any contributions required to Research Schemes - see paragraph 95).

For the year 1963/1964, Loan Fund requirements are estimated at £197,000, and a very preliminary estimate of net C.D. & W. funds required is £180,000, to which must be added the contributions from Territorial revenues totalling about £200,000 (mainly for the Geological Survey and Tsetse Control work) giving a total for the year of about £575,000.

91. The C.D. & W. Funds available are as follows:-

	£
Grant 1959/1964	875,000
Savings 1956/1960	70,000
Allocation from High Commissioner's Reserve 1956/1960	46,000
	£ 991,000

As will be seen from Appendix F, it is proposed to spend £881,016 of this amount during 1960/1963, leaving about £110,000 for 1963/1964. The present estimate of C.D. & W. funds required during that year is £181,931 (Appendix F), but it is hoped that savings from 1960/1963, together with any further allocation made to the Territory, will go far to bridge the gap. For the time being, detailed plans for 1963/1964 are not being prepared: the position will be reviewed later when the funds likely to be available are known more precisely.

/SECTION 18.

SECTION 18.

AGRICULTURE.

92. The existing soil conservation scheme is not entirely successful as in many areas the fences erected around eroded areas and round spring sponges have been maliciously damaged. Fences which have been erected by individual farmers have however been well maintained and those farmers are now in a position to practise conservation farming - they produce soil cover crops and grass leys and can construct grassed erosion strips and contour banks and can integrate the animal factor into their crop production. It is accordingly proposed to limit allied soil conservation and reclamation work to areas where active co-operation and support has been received from individual farmers or Tribal Authorities. Elsewhere it is proposed to assist individual farmers to obtain fencing materials, carts and agricultural implements either on repayment, as a loan, or as a grant and loan, depending on the circumstances. Light earth moving machinery, equipment and implements must be made available to those farmers, again either on loan from a central pool or by assisting individual farmers or groups of farmers to purchase those items.

93. The improvement of crop yields and farming practices generally remains one of the most important tasks of the Agricultural Department, and it is proposed to set up a Demonstrator Training Centre at Mahalapye, where a three-year course would be given and diplomas awarded. Successful candidates would be eligible for appointment as Grade I Demonstrator.

94. Three important research schemes are also proposed: a soil survey of the more suitable areas for agriculture in the territory with soil mapping and attention to possible erosion; a Sand-veld Pasture Research Station to gain further knowledge of the stock-carrying potentialities of the regions covered by Kalahari sand; and an experimental station in Ngamiland to ascertain which crops can best be grown in the area and under what farming system.

95. The three research schemes would presumably qualify for grants from Colonial Development and Welfare Research Funds, and the cost of those schemes has not been included in the total Territorial grant from Colonial Development and Welfare funds, although it now appears likely that a contribution from the Territorial allocation may be required. The costs of the other projects are:-

	1960/1963	1963/1964	Total
Soil Conservation	£15,020	£4,778	£19,798
Demonstrator Training	6,334	1,858	8,192

Total Requirement	1960/1963	£21,354
	1963/1964	£6,636

The loans required for the Soil Conservation Scheme appear suitable for financing from the Agricultural Loans Fund and this question will be further examined. The cost of the Research Scheme is:-

		£
Sand-veld Pasture Research	(5 years)	30,779
Soil Survey	(4 years)	36,975
Ngamiland Experimental Station	(5 years)	31,000
		£ 98,754

/SECTION 19.

SECTION 19.

COMMUNICATIONS.

96. Roads: The length of roads maintained from public funds is 4,603 miles, which are classified as follows:-

Main	1,195 miles
Secondary	526 "
Improved track	343 "
Track	2,539 "
	4,603 "

There is also a large mileage of tracks not maintained by Government but which are important for local communications.

97. Road construction and maintenance is an arduous task and the living conditions of field staff and labour leave much to be desired. With the development that has taken place the time has come to improve these conditions by the establishment of more permanent road camps. It is intended to provide permanent stores, offices and security fencing and it is hoped to provide permanent accommodation from the housing loan. These improvements should attract a better class of recruit from the local inhabitants, a class that can be trained to take over more responsible work on road maintenance. A twenty-five mile stretch of main road could be supervised by a Road Overseer based on a permanent camp, and a Road Foreman could then be expected to supervise a section larger than as at present. The present scheme would provide about six camps only but this would be a move in the right direction.

98. The major items of road construction proposed for 1960/1963 are:-

	£
(a) Main north-south road	15,000
(b) Francistown-Maun road	10,000
(c) Lobatsi-Ghanzi road	10,000
(d) Maun-Ghanzi road	5,000
(e) Crown Lands roads	5,000
(f) Tribal District roads	5,000
(g) Farming District roads	5,000
(h) Block Allocation	12,300
	£67,300

The block allocation is to meet unforeseen additional demands and may include items not indicated above. This programme is in excess of its funds available and certain items will have to be carried over to a later period.

99. Bridges: The term "bridges" includes causeways and culverts over 2 feet in diameter. The provisional programme for 1960/1963, which is subject to alteration in the event of new commitments, detailed costings after site investigations, etc. is as follows:-

/(a) Completion

	£
(a) Completion of items carried over	5,000
(b) Ramoutsa Station bridge	5,000
(c) Matlapaneng bridge - Maun	10,000
(d) Pilane/Mochudi causeway	1,000
(e) Tati bridge - Francistown	20,000
(f) Toteng bridge	3,000
(g) Mahalapye main road bridge	15,000
(h) Small bridges not specified	6,000
	£65,000

As with roads, the funds available will not allow for the full programme to be carried out.

100. Air Transport: Air transport for passengers and light freight might also be extended by an increase in the subsidy (at present £6,000 a year). The existing route Bulawayo - Francistown - Maun (weekly) with extension to Ghanzi (fortnightly) might be further extended (as a weekly service throughout) from Ghanzi to Lobatsi. This would link Ghanzi more closely with the rest of the Protectorate and would enable mails to be sent direct and speedily (at present much of Ghanzi mail is routed via Gobabis in South West Africa). The extension would be across the Kalahari, but the dangers of the route are now reduced as owing to improvement of the road there is daily traffic and it would be possible for the aircraft in an emergency to land on a pan near the road and for passengers to be taken on by a passing truck. No provision has however been made in this plan for an additional subsidy.

101. Telephones: An extensive development of the telephone service is proposed which, together with the provision to be made in the annual estimates, will provide much of the immediate needs of the Protectorate. Full details of the proposed extensions are given in Appendix H. Radio telephone links between Francistown and Maun and, later, Ghanzi, will be provided for in the annual estimates.

The requirements are:-

	1960/1963	1963/1964	Total
	£	£	£
Roads and Bridges	151,000	40,000	191,000
Telephone extensions	84,000	27,000	111,000

Total requirement 1960/1963 £235,000
1963/1964 £67,000

SECTION 20.

EDUCATION.

102. A second Teacher Training College (situated probably in the Northern Protectorate, at Francistown) is required. The existing college at Lobatsi in the South has already reached maximum optimum size. Practising facilities are limited and its output of trained teachers is approximately only half of territorial requirements. The new college will cost about £54,800 to build.

103. The village schools at Lobatsi and Francistown are used, or will be used, as practising schools for the Teacher Training Colleges. At Lobatsi extensions are required, while at Francistown two large new schools should be built. A Government school is required in the large Government camp at Gaberones

/for

for the children of African Government servants. For these projects a sum of £28,000 is needed.

104. The Roman Catholic Missions, now unified as a Prefecture, have submitted educational development plans for the period 1960/1965 requiring in capital almost £80,000. Government assistance during 1960/1963 to the extent of £15,500 may be desirable. Most of this money would be spent on secondary educational extensions at Khale Mission and in Francistown. While the Roman Catholics are the only mission body at present actively engaged in conducting schools, the London Mission Society plans to open a secondary school at Ootsi in the Southern Protectorate. The original plans envisaged a junior secondary school costing £25,000 but later plans provide for a full secondary school costing twice as much. It is proposed that the Colonial Development and Welfare grant of £10,000, already provided, be doubled.

105. The most urgent need in the immediate future for European education will be additional hostel accommodation at Ghanzi to cope with the increase in the population resulting from the allocation of new farms. A new hostel, two new classrooms and a hall will be required. The total cost of buildings and equipment is estimated at £41,250, of which £31,250 will fall in 1960/1963.

Total requirement	1960/1963	£169,414
	1963/1964	£ 90,092

SECTION 21.

ELECTRICITY.

106. Improvement of the Lobatsi supply is urgently required. The Colonial Development Corporation are unwilling to extend the Abattoir plant until the process of handing over to the new company is completed (paragraph 24). But whether eventually the Abattoir plant is extended or a separate plant has to be provided for the town supply, money will have to be found. There is not the same urgency for improvement of Francistown supplies, but the present plant is not likely to be able to cope with future demands and when Kariba power is available the best solution may be to buy electricity in bulk from the Federal Electricity Supply Commission. It is also desirable to provide a small power plant to meet the needs of the growing township of Gaberones. It is probable that Mahalapye will be supplied from a plant to be erected by Rhodesia Railways.

107. The estimated cost of these proposals is:-

	£
Lobatsi	50,000
Francistown	70,000
Gaberones	20,000
	£140,000

Total requirement (all within 1960/1963)
£140,000

/SECTION 22.

SECTION 22.

THE GEOLOGICAL SURVEY.

108. The primary functions of the Geological Survey are geological mapping, mineral survey, and underground water development work. During 1960/1964 it is hoped to complete the primary reconnaissance geological mapping - which has already shown its value, as the Kgagikwe manganese deposit was discovered as a direct result of mapping. This mapping will be followed by investigations of minerals located during mapping. Other mineral investigations proposed include extensive work to locate good quality or coking coals. Assistance to mining companies, etc. will continue.

109. Underground water development will continue to play an important part in the Territory's economy and the Geological Survey will be required to advise on siting of boreholes and to supervise drilling operations. With certain minor changes, however, the existing establishment should be adequate. At present the Geological Survey is financed by a Colonial Development and Welfare scheme but personal emoluments and other recurrent expenditure will mainly be borne on estimates. The cost of the Survey over the years 1960/1963 is estimated as follows:-

	£
CAPITAL EXPENDITURE	
Motor Vehicles	20,500
Camp Equipment	3,700
Office and Store Extensions	1,500
Instruments and Laboratory Equipment	1,500
Plant and Tools	900
Publication of Maps	2,400
Office Equipment, etc.	200
	£ 30,700
RECURRENT EXPENDITURE	
Personal Emoluments and Gratuities	119,098
Other Recurrent Expenditure	54,334
	£ 173,432

(See under "Water Development" - Section 26 - for costs of Boring Branch).

Requirement	1960/1963	£204,132
	1963/1964	66,458

SECTION 23.

MEDICAL.

110. The major items provided for in 1960/1963 are a Leper Settlement at Maun, new buildings for the Seventh Day Adventist Mission Hospital at Kanye, extensions to the Mental Home at Lobatsi, extensions to Francistown Hospital, a Laboratory at Lobatsi and an X-ray unit and buildings at Ghanzi.

/111. The

111. The Leper Settlement is required as there are no facilities for treatment in the Protectorate and at present patients have to go to Basutoland. This arrangement is inconvenient to, and unpopular with, patients. It is likely that other cases of leprosy which are thought to exist in Ngamiland would come forward for treatment if local facilities were available.

112. The proposed laboratory at Lobatsi will avoid the delay in sending specimens to Johannesburg for examination. Frequently the delay renders specimens unsuitable for examination and in any event results are rarely received in less than 10 days.

113. Provision is also made for investigation and control of trypanosomiasis. This proposal will involve capital expenditure of £2,000 and recurrent expenditure amounting to about £9,000 a year.

Requirement	1960/1963	£70,396
	1963/1964	£12,711

SECTION 24.

TSETSE FLY CONTROL.

114. The effect of Tsetse Fly on the economy of Ngamiland, and measures for Tsetse control, were recently examined by a working committee of the Local Committee on Trypanosomiasis Control and a detailed report was issued in May, 1959.

115. The main effects of the Tsetse Fly advance have been:-

(a) to depopulate the swamp area and certain other areas, such as the Naragha Valley near Maun;

(b) the loss of valuable grazing areas;

(c) the loss of valuable agricultural areas, since the best areas are those near the swamps and rivers. The Nokaneng - Gomare area, which is now seriously threatened, produced 50 to 75% of the grain in Ngamiland and a permanent grain shortage will result if the area is not reclaimed; and

(d) an increase in sleeping sickness (hospital cases - 1954 - 2, 1955 - 4, 1956 - 9, 1957 - 19, 1958 - 71).

116. The working committee accordingly recommended that a number of additional measures should be taken, including:-

(a) water development, if possible, 20 miles West of the fly-belt to allow the evacuation of cattle from heavily infested areas;

(b) safeguarding of various grazing areas;

(c) provision of adequate veterinary field laboratory facilities, and use of experimental herds;

(d) resettlement of certain areas;

/(e) evacuation

(e) evacuation of isolated villages in heavily infested areas;

(f) establishment of dispensaries and provision of a mobile dispensary unit to combat sleeping sickness; and

(g) an attempt to clear the swamps to restore the river flow as far as Tsau.

Recommendation (g) was investigated by the Economic Survey Mission, whose Report is awaited.

117. The major effort must however continue to be directed to control of Tsetse Fly itself. This so far has mainly been carried out by discriminative clearing of the vegetation harbouring the fly. Maun has been protected, although further work in the area is required, and attention is now being paid to the "Western Front", i.e. the line of villages in the heavily-infested areas, to the West of the swamp, including Nokaneng and Gomare, and to the Tsau district. North-east of Maun work is in hand to relieve the pressure on Shorobe.

118. Dr. Lewis, of the World Health Organisation, visited the Tsetse areas in June and July, 1959, and the Tsetse Fly Control Scheme for 1960/1964 was drawn up in the light of his recommendations. The cost of the direct control work required during 1960/1963 is about £236,000 but most of this will be borne on the Protectorate's budget. In addition, the following schemes (which are included under the respective departmental headings) are required:-

(i) Veterinary investigation
(ii) Medical investigation
(iii) Agricultural experimental station.

Requirement	1960/1963	£235,632
	1963/1964	£ 86,836

SECTION 25.

VETERINARY.

119. The major requirement in 1960/1964 is to complete additional disease control fencing to localise outbreaks of Foot and Mouth Disease. The scheme provides for an expenditure of £175,000. Since 1933 there have been nine outbreaks of Foot and Mouth Disease in the Territory, several of which originated in the Ngamiland area. A number of disease control fences were erected as a result of recommendations of an Interterritorial Committee in 1950 but there remain uncontrolled routes, particularly in the Kalahari area, about which the Union authorities have made constant representations. It is now intended to construct a further 460 miles of fencing and to provide the necessary quarantine camps, transport, personnel, etc. This will go a long way towards meeting Union requirements.

120. The veterinary aspects of the proposals to combat Tsetse Fly in Ngamiland (see Section 24) are estimated to cost £37,196.

121. The amounts required are:-

	1960/1963 £	1963/1964 £	Total £
Disease Control Fencing	175,091	-	175,091
Trypanosomiasis investigation	37,196	8,179	45,375

Total requirement 1960/1963 £212,287
1963/1964 £ 8,179

SECTION 26.

WATER DEVELOPMENT.

122. There is a vast unsatisfied demand for additional water supplies for townships, farms, tribal agricultural lands, new grazing grounds, etc. Investigations are taking place to ascertain whether a surface conservation scheme is possible at Lobatsi; it is proposed to supply Gaberones by means of an 11-mile pipeline from the recently completed dam at Notwani and it may be necessary to provide for taking over the water supply at Francistown. Further development of underground supplies is also planned. The drilling of new boreholes under the existing development plan has outstripped the equipment of the holes with pumps or windmills, and it is proposed to cease contract drilling to allow equipment of holes to catch up. This will also allow the Geological Survey time to make a closer examination of the areas eventually included in the 1960/1964 programme and, it is hoped, result in the percentage of successful boreholes exceeding even the present very satisfactory figure. Drilling of urgently required supplies will be carried out by the departmental boring branch during the period. Department drilling in the past has been largely for urgent demands in remote areas involving long slow hauls of rigs and its completion rate has been low, but it is expected that with new equipment and a co-ordinated advance programme the Boring Branch will be able to complete at least 60 - 70 boreholes a year, and possibly considerably more. The cost of equipping a borehole varies from about £120 for a hand pump to £450 or more for a power pump. The annual cost of equipment is estimated at about £20,000 - 25,000. In the first year, to provide equipment, additional to that in hand, to complete the equipment of boreholes drilled in 1958/1960, a further amount of about £10,000 will be required.

123. The estimated costs of the various major township water schemes are, very roughly, as follows:-

	£
Gaberones	65,000
Mahalapye	10,000
Lobatsi	150,000
Francistown	110,000
	£335,000

In addition, under the general heading of "Township and Government Supplies", provision is made for the expenditure of £20,000 a year for Government camps. This will cover the improvement of supplies at district headquarters, police posts, etc.

124. It is also proposed to form a technical services unit which would be available to give technical advice and assistance on dam and weir construction and also a dam construction unit to clean and construct dams and erect weirs in Tribal areas.

125. A minor item is a small pilot scheme to establish the

/practicability

practicability of pumping water from the Botletle River to grazing areas in the Hainoveld area, where underground water has proved difficult to find. If this is successful, a more ambitious scheme may be required later. No specific provision has been made for this item.

126. The amounts required are as follows:-

	1960/1963 £	1963/1964 £	Total £
Townships and Government camps	395,000	20,000	415,000
Equipment of boreholes	75,000	20,000	95,000
Technical Services unit and Dam construction unit	58,096	17,832	75,928
Boring Branch	181,673	54,741	236,414

Total requirement 1960/1963 £709,769
1963/1964 £112,573

SECTION 27.

HOUSING.

127. A survey of housing needs conducted recently showed that 180 senior type quarters (including flats) are required. The cost of a furnished house averages £4,115, and of each flat is expected to be about £1,300. The gross amount required would therefore be around £712,000. A similar survey of junior type housing requirements showed that about 709 new houses will be required during the period 1960/1964. During 1960 it is proposed to spend some £450,000 in an endeavour to meet the more urgent of these requirements.

Total requirement 1960/1963 £450,000
1963/1964 £150,000

SECTION 28.

MINOR SCHEMES.

128. A maize mill is to be set up shortly at Lobatsi by the proprietor of the Mafeking mill. This welcome move by private enterprise relieves Government of the necessity of considering further the provision of a mill.

129. A survey of the state of the Bushman population is at present in progress by a specially qualified officer of the District Administration. The survey will continue into 1960/1961 and small additional funds will be required. It may be that the results of the survey will include a recommendation that Bushman Reserves should be established, and a token amount of £2,000 has been included for the survey and for any preliminary work which may be necessary in such Reserves, e.g. boreholes, school huts, dispensary huts, etc.

Provisional requirement 1960/1963 £2,000
1963/1964 Not estimated.

APPENDIX A.

COLONIAL DEVELOPMENT AND WELFARE SCHEMES 1945/1960

SUMMARY.

I. Grants:

(1) (a) Territorial Allocation

Approved Grants:

	£	£
1945 Act	830,000	
	83,875	
	103,000	1,016,875
1955 Act	980,000	
	404,000	1,384,000
		2,400,875
Less Withdrawn by High Commissioner		50,000
		£ 2,350,875
(b) Central Allocation		394,427
(c) Research Scheme		34,185

II. Annual Expenditures: (Actual and Estimated)

	Territorial £	Balance £	Central £	Balance £	Research £	Balance £
1940 Act	38,888					
1945 Act	701,905					
1955/56	152,812		25,877			
1956/57	349,898		55,552	56,413		
1957/58	395,430		33,036	23,377		
1958/59	280,634	431,308	19,539	3,838	22,682	11,503
1959/60	361,384	69,924	3,838	-	11,503	-

The annual expenditures shown above do not include expenditure on Aerial and Topographical Surveys. These are met from Central allocations, but are not shown because they do not actually affect territorial development.

* £111,965 Present Geological Survey Scheme.
£280,335 Past Geological Survey Schemes, Aerial and Topographical Surveys.

APPENDIX B.

III. COLONIAL DEVELOPMENT AND WELFARE SCHEMES 1940/1960

DETAILS.

(a) Territorial Allocation:

Schemes No.	Name	Expenditure to 31.3.1959	Estimates 1959/60	Supplementary 1959/60	Total 1959/60
		£	£	£	£
	Schemes under 1940 Act	38,888	-	-	-
D599A	Housing	3,582	-	-	-
D 602A	Medical Services	789	-	-	-
D678A	Water	239,000	-	-	-
D679A	Livestock and Agriculture	60,077	-	-	-
D680A	African Agriculture	37,841	-	-	-
D681-C	Tsetse Fly	177,277	26,358	5,523	31,881
D682	Experimental Agriculture	1,877	-	-	-
D683	Spineless Cactus	62	-	-	-
D990A	Surface Water	138,142	-	-	-
D1036	Road Improvements	34,613	-	-	-
D1037	Medical Services	69,007	-	-	-
D1044	Mechanical Workshops.	10,100	-	-	-
D1045	Education	89,932	-	-	-
D1409	Water	18,965	-	-	-
D1412	Water	28,000	-	-	-
D1463	Water	2,550	-	-	-
D1805	Foot and Mouth Disease	78,678	-	-	-
D1930	Mission School	1,000	-	-	-
D2014	Treponematosis Control	610	-	-	-
D2515	Soil Conservation	13,539	1,700	-	1,700
D2543	Boarding School, Lobatsi	26,531	-	-	-
D2553	Surface Water	38,302	17,694	-	17,694
D2573	African Education	25,175	-	4,825	4,825
D2362	Roads	145,750	18,268	-	18,268
D2369	Underground Water	342,502	62,445	-	62,445
D2677	Cattle Route Reservoirs	4,444	310	12,282	12,592
D2835	Diphtheria/Whooping Cough	5,418	-	-	-
D2894	Geological Survey	-	27,263	-	27,263
D3046	Education	90,305	58,950	10,201	69,151
D3047	Veterinary	48,407	2,000	1,136	3,136
D3064	Agriculture	32,806	2,804	-	2,804
D3067	Medical	92,943	11,245	30,342	41,587
D3319	Veterinary Laboratory	-	8,313	-	8,313
D3376	Veterinary School	3,753	-	1,996	1,996
D3477	Bamangwato Schools	10,071	25,000	-	25,000
D3478	Junior Secondary School	-	10,000	-	10,000
D3570	Clerical Courses for Africans	-	3,100	-	3,100
D3575	Foot and Mouth Disease	8,682	-	1,318	1,318
D3721	Bushman Survey	-	-	4,361	4,361
D3826	Water Development Dukwe/Shashi Cattle Route	-	-	2,450	2,450
D3867	Survey B.P./S.R. Boundary	-	-	5,000	5,000
D3949	Medical Facilities, Bakgatla Reserve	-	-	6,500	6,500
		£1,919,619	275,450	85,934	361,384

/(b) Central Allocation:

(b) Central Allocation.

Scheme No.	Scheme Title	Total Allocation	Expend. to 31.3.59	Estimates 1959/60
		£	£	£
D 940	Expansion of Geological and Mineral Surveys	184,963	182,758	-
D 997	Scholarship - G. Nettelton	894	894	-
D1180	Geodetic and Topographical Survey of High Commission Territories	27,789	27,789	-
D1539	Topographical Survey of the Bechuanaland Protectorate	35,136	35,136	-
D2069	Geological Investigations by Dr. B. C. King	680	680	-
D2744	Aerial Survey (about 20,000 sq. miles) (Geodetic and Topographical Surveys)	25,000	24,918	-
D2894	Geological Survey (Geological Hydrological and Mineral Survey)	111,965	108,127	3,838
D3185		8,000	7,890	-
	Totals	£ 394,427	388,192	3,838

(c) Research Allocation.

R 907	Establishment of Veterinary Investigational Laboratory	34,185	22,682	11,503

APPENDIX C.

LOAN FUNDS 1956/1960.

(c) Loan Funds.

(1) Loans which have been authorised by Proclamation are:-

	£	£
Proclamation 3 of 1956:		
Staff Quarters		91,252
Proclamation 59 of 1956:		
European Staff Quarters	115,370	
African Staff Quarters	34,630	
Railway Water Supplies	10,000	160,000
Proclamation 67 of 1957:		
Housing	540,000	
Telecommunications	150,000	
Railway Water Supplies	47,000	
Electricity	72,000	
Township Water Supplies	60,000	824,000
		£ 1,075,252

(2) Variation of Proclamation 67 of 1957 submitted for approval.

	£
Housing	632,513
Telecommunications	109,514
Railway Water Supplies	33,000
Township Water Supplies	48,973
	£ 824,000

(3) Loans already raised and to be raised within these authorities are:-

	£
I. Already raised:	
(a) 5¾% Intercolonial Loan 1980	91,252
(b) 5¾% Intercolonial Loan 1971	40,000
(c) 5¾% Intercolonial Loan 1976	120,000
(d) 6½% Intercolonial Loan 1972	75,000
(e) 6½% Intercolonial Loan 1977	125,000
(f) 6½% Intercolonial Loan 1978 (I)	100,000
(g) 6½% Intercolonial Loan 1983	100,000
(h) 6½% Intercolonial Loan 1978 (II)	65,000
(i) 6½% Intercolonial Loan 1983 (II)	90,000
(j) 6½% Intercolonial Loan 1978 (III)	75,000
(k) 6½% Intercolonial Loan 1983 (III)	62,269
(l) 6½% Intercolonial Loan 1978 (IV)	43,000
	£ 986,521
II. To be raised:	
(m) 1959/1960 Programme	88,731
	£1,075,252

(4) Past expenditure, present allocation and future allocations within loans raised or to be raised are:-

I. Housing (Staff)

		£	£	£
Expenditure to 31.3.59.				
	(a)	91,252		
	(b)	40,000		
	(c)	110,000		
	(d)	50,183		
	(e)	73,500		
	(f)	100,000		
	(g)	75,768		
	(h)	18,779		
			549,482	
Carried forward to 1959/1960			(b) 4,222	553,704
Allocation 1959/1960 *			(i) - (m)	320,059
				873,763

* Anticipated carry-over to 1960/1961 £55,000.

II. Railway Water Supplies.

		£	£	£
Expenditure to 31.3.59.				
	(c)	10,000		
	(g)(h)	8,408		
			18,408	
Carried Forward to 1959/1960			(g)(h) 16,592	
Allocation 1959/1960			(i) 7,000	
			(j) 1,000	43,000

III. Township Water Supplies.

		£	£	£
Expenditure to 31.3.59.				
	(g)	5,000		
	(h)	18,229		
			23,229	
Carried forward to 1959/1960			(h) 1,771	25,000
Allocation 1959/1960 *			(i) - (l)	23,973
				£48,973

*Anticipated carry-over to 1960/1961 £9,486.

IV. Telecommunications:

		£	£	£
Expenditure to 31.3.59.				
	(d)	24,817		
	(e)	51,500		
	(g)	10,732		
	(h)	4,006		
			91,055	
Carried forward to 1959/1960			(h) 11,495	102,550
Allocation 1959/1960			(i)	1,162
			(j)	1,288
			(l)	4,514
				£ 109,514

Grand Total £1,075,252

REVENUE AND EXPENDITURE 1955

REVE

	ACTUAL			
	1955/56	1956/57	1957/58	
	£	£	£	
1 Customs and Excise	200420	202382	229848	
2 Taxes and Duties	333975	378822	324476	
3 Licences	41441	43364	46385	
4 Fees of Court or Office and Earnings of Departments	34267	41966	45851	
5 Posts and Telegraphs	152229	118254	119438	
6 Judicial Fines	10127	10438	11394	
7 Revenue from Government Property	169315	169808	172078	
8 Reimbursements	10231	10003	2520	
9 Interest	4550	5344	2[illegible]	
10 Miscellaneous	13786	9617	12416	
11 Sale of Crown Lands	-	2732	-	
	970341	992780	967434	1
12 Grant-in-aid	-	140000	480000	
	£ 970341	1132780	1447434	1

EXPEN

	ACTUAL			
1 Central Administration			107957	
2 Administration of Justice			6247	
3 Agriculture			49391	
4 Allied Services			58436	
5 Audit			7525	
6 Contributions to C.D.& W. Schemes			31808	
7 District Administration			116126	
8 Education			85259	
9 Game			3000	
10 Medical			141875	
11 Pensions			61815	
12 Police			157248	
13 Posts and Telegraphs			53733	
14 Prisons			21504	
15 Public Debt			23621	
16 Public Works Department			295740	
17 Public Works Extraordinary			174021	
18 Veterinary			241145	
	£1093315	1230714	1632451	1

£ General Revenue Balance 1st April 1955 - £

ENDITURE 1955 - 1960 AND FORECAST 1960 - 1965. APPENDIX "D".

REVENUE

1957/58	1958/59	REVISED ESTIMATE 1959/60	1960/61	ESTIMATED 1961/62	1962/63	1963/64
£	£	£	£	£	£	£
229848	260428	291400	326000	361000	401000	445000
324476	407670	415900	458400	509000	547750	598000
46385	48655	54400	63500	70100	74800	79500
45351	53160	61226	85252	105252	113200	121500
119438	146647	171020	196500	176500	186500	196500
11394	10084	9000	10000	10000	10000	10000
172078	173758	176625	178450	181050	184150	187250
2520	2310	3350	2913	3000	3000	3000
2628	3145	1000	2500	2500	2500	2500
12446	13007	15968	18374	19874	21374	22874
-	3800	-	10000	10500	11000	11500
967434	1122664	1199889	1351889	1448776	1555274	1677624
480000	560002	639402	921521	982789	1058548	1111860
1447434	1682664	1839291	2273410	2431565	2613822	2789484

EXPENDITURE.

REVISED ESTIMATES			ESTIMATED.			
107957	97695	140000	144397	157000	164850	173000
6247	7958	14500	10363	11000	11500	12000
49391	54567	72200	83811	89100	96000	105000
58436	97459	99100	92770	97500	102000	107000
7525	9000	9600	9974	10500	11000	11500
31808	32359	44400	141518	180415	185172	194884
116126	163382	182500	194773	214250	230000	248000
85259	104790	132800	155427	166000	181000	202000
3000	4000	6100	8044	8500	8900	9500
141875	152391	188600	209820	223000	240000	262000
61815	53515	60000	61100	64000	67000	70000
157248	152390	179400	216832	226000	237000	249000
53733	62703	77900	90864	88000	92500	97100
21504	22016	26100	29786	31300	32900	34500
23621	61382	82800	113377	158000	198000	220000
295740	280837	367300	397147	384000	406000	428000
174021	21166	56700	60000	50000	50000	50000
241145	206695	194000	253507	273000	300000	316000
1632451	1584360	1934300	2273410	2431565	2613822	2789484

t April 1955 - £394987

APPENDIX E.

DEVELOPMENT PLAN 1960/1964

AMOUNTS REQUIRED IN 1960/1964 FOR

COLONIAL DEVELOPMENT AND WELFARE SCHEMES ALREADY APPROVED OR SUBMITTED.

	Total Scheme	Total C.D. & W.	Capital			Recurrent			Net Recurrent payable by C.D. & W.		
			1960/61	1961/62	1962/63	1960/61	1961/62	1962/63	1960/61	1961/62	1962/63
	£	£	£	£	£	£	£	£	£	£	£
Fencing B.P./S.W.A. Ngamiland	10,000	10,000	10,000	-	-	-	-	-	-	-	-
" " " Gemsbok	2,500	2,500	2,500	-	-	-	-	-	-	-	-
B.C.G. Vaccination	3,816	3,816	2,200	-	-	1,616	-	-	1,616	-	-
St. Joseph's College	16,500	16,500	16,500	-	-	-	-	-	-	-	-
Bushman Survey	3,165	3,165	82	-	-	3,083	-	-	3,083	-	-
ø Ghanzi - Lobatsi Cattle Route Reservoirs	4,104	4,104	-	-	-	1,020	1,476	1,608	1,020	1,476	1,608
Education - Trades School	18,680	18,680	18,680	-	-	-	-	-	-	-	-
	£ 58,765	58,765	49,962	-	-				£ 5,719	1,476	1,608

ø Excluding amount financed from 1956/1960 C.D. & W. Funds.

D E V E L O P M

1960/6

PROPOSED COLONIAL DEVELOPMEN

1.	2.	3.	4.	5.	6.	7
SCHEME	Total Cost of Scheme 1960/63	1960/63 Allocated to C.D. & W.	Capital 1960/61	1961/62	1962/63	R e 1960/
	£	£	£	£	£	£
Agriculture Soil Conservation	15020	12730	2350	2650	1050	28
Demonstrator Training	6334	5022	900	-	-	19
Education	169414	159117	48400	41790	49485	30
Geological Survey	204132	44789	15700	6750	8250	563
Geological Survey-Water Development	181673	38650	26700	6050	5900	451
Medical	70396	61301	27000	13450	-	59
Roads and Bridges	151000	151000	66000	47200	37800	
Tsetse Control	235632	30807	9214	2071	1466	72
Veterinary-Disease Control	175091	159856	57805	57812	7368	11
Veterinary-Trypanosomiasis Control	37196	30612	11700	-	-	8
Water Supplies	133096	126367	48050	32750	26750	7
Bushman Reserves	2000	2000	-	1000	1000	
	£1380984	822251	313819	211523	139069	
Schemes in Appendix "E"	58765	58765	49962	-	-	
TOTAL EXPENDITURE 1960/63	£1439749	881016	714373			

APPENDIX "F".

LOPMENT PLAN
1960/64

VELOPMENT AND WELFARE SCHEMES

7.	8.	9.	10.	11.	12.	13.	14.	15.	16
Recurrent			Net Recurrent chargeable to C.D.&W.			Preliminary C.D. & W. 1963/64			
3 1960/61	1961/62	1962/63	1960/61	1961/62	1962/63	Total	Cap.	Rec.	Net R
£	£	£	£	£	£	£	£	£	£
0 2896	2990	3084	2896	2242	1542	1982	1050	3728	
1988	1646	1800	1988	1234	900	464	-	1858	
5 3028	12233	14478	3028	9175	7239	90092	85905	16750	41
0 56356	56761	60315	14089	-	-	5000	5000	61458	
0 45169	47502	50352	-	-	-	5000	5000	49741	
5954	11606	12386	5954	8704	6193	3177	-	12711	31
0 -	-	-	-	-	-	40000	40000	-	
6 72224	76152	74505	18056	-	-	3151	3151	83685	
8 11968	19336	20802	11968	14502	10401	-	-	-	
8506	7647	9343	8506	5735	4671	2045	-	8179	20
0 7930	8314	9302	7930	6236	4651	31020	28750	9082	22
0 -	-	-	-	-	-	-	-	-	
9			74415	47828	35597	181931	168856		130
-			5719	1476	1608	-	-	-	
			166643						

DEVELOPMENT PLAN

LOAN PROGRA

		1960/1961		1961/1962
Housing - European African	Details not yet available			
Totals (Provisional)		150,000		15
Posts and Telegraphs	Miscellaneous	13,000		
	Mahalapye/Machaneng Palla Ranch/Machaneng Sherwood	13,500	S.Palla (Notwani) Sherwood/Baines Drift Local Tuli farms	
	Maun Local	1,500	Kanye/Moshupa	
	Francistown Farms	5,000	Ramcutsa/Thamaga	
Totals		33,000		2
Water Supplies	Gaberones	65,000	Lobatsi	7
	Mahalapye	10,000	Francistown	4
	Lobatsi	20,000	Francistown Reticulation	3
	Camps	20,000	Camps	2
Totals		115,000		16
Electricity	-		Francistown Lobatsi Gaberones	5 2
Totals	-			7
GRAND TOTALS		298,000		40

APPENDIX G.

MENT PLAN 1960/1964

LOAN PROGRAMME

1961/1962		1962/1963		1963/1964		Totals
	150,000		150,000		150,000	600,00
Botwani)	5,000	N. Baines Drift	10,000	Ghanzi Local	1,500	
Baines Drift	10,000	Local Farms (misc.)	5,000	" Farms	15,000	
farms	6,500	Palapye/Serowe	4,000	" /D'kar	3,000	
upa	1,500	Palapye/Bobonong	7,000	Seruli/Madinare	2,500	
Thamaga	2,000			Lobatsi Farms	5,000	
	25,000		26,000		27,000	111,00
	70,000	Lobatsi	60,000			
wn	40,000	Francistown	40,000			
wn Reti-	30,000					
n	20,000	Camps	20,000	Camps	20,000	
	160,000		120,000		20,000	415,0
own	-	Francistown	70,000			
	50,000					
s	20,000					
	70,000		70,000		140,000	
	405,000		366,000		197,000	1,266,0

APPENDIX H.

DEVELOPMENT 1960/1963 - SUMMARY OF SCHEMES.

Scheme	Total Cost	C.D. & W. Funds.	Loan Funds
	£	£	£
Agriculture:			
Demonstrator Training	6,334	5,022	-
Soil Conservation	15,020	12,730	-
Communications:			
Roads, Bridges	151,000	151,000	-
Telephones	84,000	-	84,000
Education:	169,414	159,117	-
Electricity:	140,000	-	140,000
Geological Survey:			
Geological Staff etc.	204,132	44,789	-
Water Drilling (see below)			
Housing:	450,000	-	450,000
Medical:	70,396	61,301	-
Tsetse Control	235,632	30,807	-
Veterinary:			
Disease Control Fencing	175,091	159,856	-
Trypanosomiasis	37,196	30,612	-
Water:			
Drilling	181,673	38,650	-
Equipment of boreholes	75,000	75,000	-
Township and Government supplies	395,000	-	395,000
Technical Service Unit, and Dam Construction Unit.	58,096	51,367	-
Bushmen Reserves:	2,000	2,000	-
	£ 2,449,984	822,251	1,069,000

Research Schemes:		£
Sand-veld Pasture Research	(5 year period)	30,779
Soil Survey	(4 year period)	36,975
Ngamiland Experimental Station	(5 year period)	31,000
		£ 98,754

ANNEXURE I.

APPLICATION FOR A GRANT AND LOAN FROM THE COLONIAL DEVELOPMENT AND WELFARE FUND FOR SOIL CONSERVATION WORK IN THE BECHUANALAND PROTECTORATE.

(a) General description of the objects of the scheme and the advantages to be derived from it.

Colonial Development and Welfare Scheme D2515 Soil Conservation was approved for the period 1955/1956 to 1959/1960, its main objects being to fence selected eroded areas for a period sufficient to permit natural regeneration of the vegetation and to provide light earth moving machinery for the construction of earth banks where necessary to reclaim dongas.

Scheme D2515 expires on the 31st March, 1960, after having attained its objects to a greater or lesser extent within the different tribal areas.

This application is also for funds from the Colonial Development and Welfare Grant for anti-erosion work but the approach and objects have been modified in the light of local experience gained over the past five years.

As it would be difficult to legislate against farming practices which cause soil erosion and to enforce such legislation, it is proposed to approach the problem more from the agricultural extension point of view and to encourage a sound land utilization policy or to foster conservation farming on arable land, grazing land and in and around villages, great care being exercised in the selection of these areas to ensure that the active co-operation of the people is obtained.

Where the Tribal Authority is actively interested, communal soil conservation or soil reclamation projects will continue but in other areas more attention is to be paid to individual farmers to assist them to maintain the fertility of their soils by the introduction of soil conservation measures such as grass strips, contour banks, and rotational cropping with cover crops, leys and legumes with the integration of the animal factor. The enclosure of agricultural lands with permanent wire fences is regarded as an essential prerequisite to this individual approach but many of these farmers however require more than technical assistance and it is proposed to assist them with fencing materials either on repayment as a loan or as a grant and loan depending on the circumstances.

Strategic fencing round boreholes is envisaged to protect the adjacent grazing, making use of fenced watering corridors and fencing of riverine areas on the same principle.

An amount has been included for fencing material, cement, reinforcing material etc. for the erection of soil conservation and soil reclamation works. Provision has been made for the purchase of further light earth moving equipment, machinery, implements and possibly a vehicle or further transport trailers as the work demands.

The services of a Works Foreman are essential to supervise this work in the field, to control the casual labour and to maintain the vehicles and stores in good condition. The Grade II drivers will be required to operate the earth moving machinery and for the cartage of fencing materials etc. Full financial provision is made for the first year as all staff are available. A gratuity has been included in the final year for the Works Foreman based on 12½% of total salary received as approved.

Maintenance and running of vehicles increases during the final year when higher maintenance costs are anticipated.

/Travelling

Travelling expenses provides for the payment of leave rail-fares and travelling and subsistence allowance where applicable.

Provision is made for camping equipment as the soil conservation unit has no fixed station and is a field unit.

Furthermore, light earth moving machinery, equipment and implements must be made available to farmers either on loan from a central pool or by assisting individual farmers and/or groups of farmers to purchase these items. The use of animal drawn sledges is an important contributory cause of soil erosion but until we can assist the farmer in obtaining light carts or waggons at a reasonable price or on credit, the sledge must of necessity still continue to be widely used. For these reasons, loan funds are also needed and an application is being made for International Co-operation Administration Revolving Loan Funds.

The advantages derived from this Scheme will be the conservation of our greatest natural resources viz. soil and water, the reclamation of eroded areas and the utilization of the soils to maintain optimum sustained production.

(b) Relation of proposed scheme to Territory's development Programme.

The economy of the Territory is based on its livestock industry and the integration of the animal factor into agriculture would be to the mutual benefit of both animal and crop husbandry which are dependant on the conservation of the natural vegetation and the soil. This reflects the agricultural policy of the Territory. The scheme is an integral part of the development programme for 1960/1964 and funds from the territorial C.D.W. allocation have been provisionally allocated to it.

(c) Reasons for calling upon Colonial Development and Welfare Funds.

No other funds are available as the Territory is grant-aided and its economy does not make it possible at present to provide the necessary funds. In accordance with decided policy (see the Development Plan) initial provision of C.D.W. funds is sought for the first three years of the scheme only.

(d) Division of costs between Local funds and the Colonial Development and Welfare Vote.

It is proposed that all Capital Expenditure should be borne by the Colonial Development and Welfare Vote but that Recurrent Expenditure should be provided on the tapering principle, the Colonial Development and Welfare contribution being 100%, 75%, and 50% over the initial three year period of the scheme.

(e) Assistance to Third Parties.

This Scheme envisages assistance to Third Parties in the form of loans to African farmers at a nominal rate of interest. Financial control will be exercised over the loan expenditure by insisting on a deposit being made which will be accounted for in accordance with Government Financial and Accounting Instructions and the implements etc. being supplied through the department against a signed acknowledgment of debt by the recipient, interest on the money at 4% being added to the landed cost of the item. This interest to accrue to Government since there will be no extra administrative charges as existing

/staff

staff and facilities will be used to control this expenditure.

(f) Availability of staff, materials and labour necessary to implement the scheme.

It is intended that the staff employed under the present soil conservation scheme D2515 would be retained. Other staff could easily be recruited locally and equipment obtained locally, from neighbouring countries or through the Crown Agents where necessary. The two tractors, bulldozer blades, soil ripper, trailer, caravan etc. purchased under Scheme D2515 Soil Conservation which expires on the 31st March, 1960, be taken over by the Scheme now submitted. Due to a high standard of maintenance, this equipment is still in good running order in spite of the rough terrain in which it has been used.

It has been possible on these grounds to reduce the application for funds under Capital to a minimum.

(g) Capital Works.

No capital works are envisaged other than soil conservation structures which would be designed by professional departmental staff.

(h) Professional Advice.

This application is based on departmental professional advice, experience gained locally and from adjoining territories, the results of preliminary departmental investigations and the Economic and Financial Report of the Symon Commission, Page 77 Paragraph 34.

APPENDIX I.

SOIL CONSERVATION

FINANCIAL SUMMARY

1. Administering Authority:			Bechuanaland Protectorate Government.
2. Allocation			Bechuanaland Protectorate Territorial.
3. Classification			Agriculture.
4. Description of Scheme			Soil Conservation.
5. Total Cost (Sterling)			£19,798.
6. Colonial Development and Welfare Assistance required:			
Grant (In sterling)			£12,730.
7. Basis of Administration for Accounting Purposes:		£	£
Capital (first three years)			6,050
Recurrent (first three years)			
Personal Emoluments		6,510	
Other Charges		2,460	
			8,970
Total Cost			15,020
8. Basis of calculation of claims where the grant and loan does not provide one hundred per cent of the cost:		£	£
Capital Expenditure	100%		6,050
Recurrent Expenditure:			
1960-1961	100%	2,896	
1961-1962	75%	2,242	
1962-1963	50%	1,542	
			6,680
Total Grant			12,730

APPENDIX II.

SOIL CONSERVATION

DETAILED ESTIMATES.

Item No.	Head of Service	1960/1961	1961/1962	1962/1963	Total 1960/1963	1963/1964	Total
		£	£	£	£	£	£
	CAPITAL:						
1.	Fencing Materials, Soil Conservation Structures etc.	1,000	1,000	1,000	3,000	1,000	4,000
2.	Light Earth Moving Equipment, Machinery, Implements and Vehicle etc.	1,200	1,500	-	2,700	-	2,700
3.	Hand Tools etc.	150	150	50	350	50	400
	TOTAL CAPITAL EXPENDITURE	£ 2,350	2,650	1,050	6,050	1,050	7,100
	RECURRENT:						
	PERSONAL EMOLUMENTS.						
	Division II						
4.	1 Works Foreman, £576 x 30 - 786.	696	726	756	2,178	786	2,964
5.	Inducement Allowance.	232	242	252	726	262	988
6.	Gratuity.	-	-	-		500	500
7.	Education Allowance.	120	120	120	360	120	480
8.	Bechuanaland Protectorate Allowance	60	60	60	180	60	240
		£1,108	1,148	1,188	3,444	1,728	5,172
	Division III						
9.	3 Motor Drivers, Grade II.	468	522	576	1,566	630	2,196
10.	Casual Labour and rations.	500	500	500	1,500	500	2,000
	TOTAL PERSONAL EMOLUMENTS:	£2,076	2,170	2,264	6,510	2,858	9,368

/OTHER CHARGES.

Item No.	Head of Service	1960/1961	1961/1962	1962/1963	Total 1960/1963	1963/1964	Total
		£	£	£	£	£	£
	OTHER CHARGES.						
11.	Maintenance and Running of vehicles and tractors.	450	450	450	1,350	500	1,850
12.	Uniforms.	20	20	20	60	20	80
13.	Travelling Expenses.	150	150	150	450	150	600
14.	Camping Equipment and Incidental Expenses.	200	200	200	600	200	800
	TOTAL OTHER CHARGES.	£ 820	820	820	2,460	870	3,330
	TOTAL RECURRENT EXPENDITURE.	£2,896	2,990	3,084	8,970	3,728	12,698
	TOTAL CAPITAL AND RECURRENT EXPENDITURE:	5,246	5,640	4,134	15,020	4,778	19,798
	Less: Contribution from Bechuanaland Protectorate Government (Nil, 25%, and 50% in 1961/1962 to 1962/1963 respectively of Recurrent Expenditure).	-	748	1,542	2,290	2,796	5,086
	TOTAL SCHEME:	£5,246	4,892	2,592	12,730	1,982	14,712

In addition £10,000 required as a loan fund to assist farmers in purchasing equipment etc. Repayment by farmers over 3 years at a nominal rate of interest.

ANNEXURE II.

APPLICATION FOR COLONIAL DEVELOPMENT AND WELFARE GRANT FOR AGRICULTURAL DEMONSTRATOR TRAINING.

(a) General Description of Scheme and advantages to be derived from it.

Africans from the Bechuanaland Protectorate are no longer accepted by Agricultural Training Colleges in the Union or the Federation and it is thus essential that the Territory should have its own training centre, not only to allow local Africans to be trained as Demonstrators for absorption into the Service but possibly also for learner farmers.

2. Under the present system of recruiting trained Demonstrators from neighbouring territories not only are posts which should be filled by Batswana filled by other races but a wastage of staff and funds occurs due to many recruited men proving unsatisfactory. It is therefore proposed to recruit Batswana with a minimum standard VI qualification and after an intensive 3 months course decide which probationer demonstrators would be unsuitable for further training. Wastage would thus occur at an early stage before much money had been expended on training.

3. The total time of the training course including field experience is estimated at three years. The course would be designed to turn out a useful demonstrator schooled in local conditions and with a practical rather than theoretical outlook. On successful completion of the course the demonstrator would be awarded a diploma and be eligible for appointment as a Grade I Demonstrator.

4. A Demonstrators Lecture Room was erected and furnished under a previous Colonial Development and Welfare Fund Grant. This has only been utilized for short refresher courses, etc., as it has been found impossible to try to arrange a full time in-service training course without a specific Senior Service Training Officer. The major requirement would thus be a Training Officer.

5. The only capital expenditure required is for accommodation in the form of huts, which can be built under contract for £120 each to accommodate 3 men per hut, and a small sum for equipment.

6. For a very small amount it would therefore be possible to provide a most useful course which should have important long-term results on the agricultural practices of the country.

(b) Relation of scheme to the Territory's Development Plan.

7. The scheme is an integral part of the 1960 - 1964 Development Plan, and provisional allocation of funds within the territorial C.D.W. allocation has been made.

(c) Reasons for calling upon Colonial Development and Welfare Funds.

8. Funds are not available locally.

(d) Basis of division of cost between local funds and Colonial Development and Welfare Vote.

9. Colonial Development and Welfare funds to bear 100% of capital costs; 100% of recurrent in 1960/1961; 75% of recurrent

/in

in 1961/1962 and 50% in 1962/1963.

(e) Assistance to third parties.

10. Not applicable.

(f) Availability of staff, etc.

11. Only two posts are involved and no difficulty is anticipated in filling them.

(g) Capital Works.

12. Not applicable.

(h) Professional Advice.

13. The scheme is based on the advice of the Director of Agriculture.

APPENDIX I.

AGRICULTURAL DEMONSTRATOR TRAINING.

FINANCIAL SUMMARY.

1. Administering Authority	Bechuanaland Protectorate Government.
2. Allocation	Territorial.
3. Classification	Agriculture.
4. Description of Scheme	Agricultural Demonstrator Training.
5. Total Cost	£8,192.
6. Colonial Development and Welfare Grant required	£5,022.

7. Basis of Administration for Accounting Purposes

Capital	£900
Recurrent	£5,434
	£6,334

8. Basis of calculation of Grant

			£
Capital		100%	900
Recurrent	1960/1961	100%	1,988
	1961/1962	75%	1,234
	1962/1963	50%	900
			£5,022

9. Any other Accounting Instructions	None.

APPENDIX II.

AGRICULTURAL DEMONSTRATOR TRAINING SCHEME.

DETAILED ESTIMATES.

Item No.	Head of Service	1960/1961	1961/1962	1962/1963	Total 1960/1963	1963/1964	Total
		£	£	£	£	£	£
	CAPITAL						
1.	Demonstrators Quarters etc.	600	-	-	600	-	600
2.	Lecture Room Furniture, training equipment etc.	300	-	-	300	-	300
	TOTAL CAPITAL EXPENDITURE	900	-	-	900	-	900
	RECURRENT						
	PERSONAL EMOLUMENTS						
	Division I.						
3.	1 Agricultural and Livestock Officer (£576x30-816x36-888)	606	636	666	1,908	696	2,694
	Division II.						
4.	1 Clerk Grade I	150	168	186	504	204	708
	Allowances.						
5.	Inducement	202	212	222	636	232	868
6.	Education	120	120	216	456	216	672
7.	Bechuanaland Protectorate	60	60	60	180	60	240
	TOTAL PERSONAL EMOLUMENTS	£ 1,138	1,196	1,350	3,684	1,408	5,092
	OTHER CHARGES						
8.	Stationery, Equipment etc.	50	100	100	250	100	350
9.	Travelling Expenses	300	350	350	1,000	350	1,350
10.	Motor Vehicle Subsidy	500	-	-	500	-	500
	TOTAL OTHER CHARGES	850	450	450	1,750	450	2,200
	TOTAL RECURRENT EXPENDITURE	£ 1,988	1,646	1,800	5,434	1,858	7,292

Item No.	Head of Service	1960/1961	1961/1962	1962/1963	Total 1960/1963	1963/1964	Total
		£	£	£	£	£	£
	TOTAL CAPITAL AND RECURRENT EXPENDITURE	2,888	1,646	1,800	6,334	1,858	8,192
	Less Contribution from Bechuanaland Protectorate Government (0%, 25%, 50% and 75% of Recurrent Expenditure from 1960/1961 to 1963/1964 respectively	-	412	900	1,312	1,394	2,706
	TOTAL GRANT	£ 2,888	1,234	900	5,022	464	5,486

N.B. No provision has been made for housing for the Agricultural and Livestock Officer or his Clerk.

ANNEXURE III.

APPLICATION FOR A GRANT FROM THE COLONIAL DEVELOPMENT AND WELFARE FUND FOR THE DEVELOPMENT OF EDUCATION IN THE BECHUANALAND PROTECTORATE.

(a) General Description of the objects of the scheme and the advantages to be derived from it.

Grave deficiencies in the Protectorate educational system have been clearly apparent to the Education Department, the administration and external advisers for some considerable time and the problems associated with possible improvement have been grappled with on numerous occasions since the end of the second World War.

2. Until quite recently extreme financial stringency coupled with the inertia of a people accustomed to and contented with a simple pastoral existence has made progress very difficult and frustratingly slow.

3. Finance remains a major problem but there has been a very marked change in the temper of public opinion about the importance of education. Apathy has been largely replaced by concern and the majority of Bechuana are now most anxious to provide their children with an education which will fit them for life in modern society. To this end they have agreed to substantial increases in the rates of both basic and graded tax. Further proof of earnestness is the startling increase in enrolment in tribal schools from 20,475 in 1955 to 33,834 in 1959.

4. With the aid of generous Colonial Development and Welfare grants it has been possible to remedy some of the more obvious shortcomings which were spotlighted in 1954 when secondary and vocational schools in the Union of South Africa ceased to accept non-European pupils from the Protectorate. Facilities at Moeng College and St. Joseph's College, the two secondary co-educational boarding schools, have been extended to matriculation level and a commercial course has been instituted at St. Joseph's College. Three junior secondary day schools have been established in tribal capitals at Kanye, Molepolole and Mochudi. The Teacher Training College was completed in 1956 and plans for a Trades School are well advanced. Hostels have been built at the European schools in Francistown, Lobatsi and Ghanzi and a small hostel for children of the coloured community in Ghanzi is being built now. A grant of £10,000 has been approved to assist the London Missionary Society to build a secondary boarding school near Cotsi in the Southern Protectorate. In the Bamangwato Reserve £35,000 has been spent on building and equipping classrooms at primary schools.

5. Nevertheless, in spite of all these improvements, the general picture today is by no means reassuring and recent statistics clearly indicate that facilities for the bulk of the school-going population are both inadequate and unsatisfactory. In June 1959 there were shortages of 74 teachers, 554 classrooms and 9,769 two-seater desks in African primary schools. In addition 494 out of a total of 900 teachers were unqualified.

6. Tribal Treasuries which are responsible for administering and financing primary education in the Reserves, are finding the greatest difficulty in raising sufficient funds to meet recurrent expenses. Resources have been strained to the limit and it would be unreasonable to expect any local assistance towards the cost of secondary or vocational education.

7. The object of this scheme is therefore to provide funds for:-

/(i) the

(i) the establishment of a second Teacher Training College in the Northern Protectorate and the provision of suitable accommodation and equipment in two African primary schools which it is proposed should be taken over by the department as practising schools for the new College;

(ii) aid to missions now planning to introduce or extend facilities for secondary education;

(iii) extensions and additions at Ghanzi European boarding school;

(iv) the building and equipment of African primary schools in the villages of Gaberones and Lobatsi which lie outside the tribal reserves.

(b) Relation of proposed scheme to the Territory's development programme.

8. Attention has frequently been drawn to the dearth of suitably educated and trained Africans who could be employed in the various departments of the Civil Service, in tribal administrations and in commercial organisations.

9. Annual output from secondary schools is very small and is quickly absorbed. In 1958 only 62 Bechuana passed the Junior Certificate examination and only two matriculated . These figures speak for themselves and it is quite clear that for some considerable time to come there will be ample scope for the employment of many more students who have completed secondary or vocational courses.

10. Many more openings will be created by development envisaged in other fields during the next four years and employment of as many Bechuana as possible is very desirable.

11. The scheme is an integral part of the development plan for 1960/1964 and funds from the territorial C.D.W. allocation to cover that plan have been provisionally allocated to cover this scheme.

(c) Reasons for calling upon Colonial Development and Welfare funds.

12. No other funds are available.

(d) Division of costs between local funds and the Colonial Development and Welfare funds.

13. Capital expenditure to be met from Colonial Development and Welfare funds. Recurrent expenditure to be met 100% by Colonial Development and Welfare funds in 1960/1961, 75% in 1961/1962 and 50% in 1962/1963.

(e) Assistance to third parties.

14. Plans of buildings will be submitted by missions for approval by the Director of Education, Director of Medical Services and the Director of Public Works before work is begun. Payment will be made only when work has been satisfactorily completed.

(f) Availability of Staff, Materials, Labour, etc.

15. Staff, materials and labour necessary to implement the

/scheme

scheme will be available. Maximum use will be made of local materials.

(g) Capital Works.

16. Arrangements for execution and technical supervision will be made by the Public Works Department. Work may be undertaken by the Public Works Department or by contractors after open competitive tendering. The form of contract proposed is the "lump sum" contract based on bill of quantities.

(h) Professional Advice.

17. This application is based on departmental professional advice and on advice given by Sir Christopher Cox, Educational Adviser to the Secretary of State.

APPENDIX I.

DEVELOPMENT OF EDUCATION

FINANCIAL SUMMARY

1. Administering Authority	Bechuanaland Protectorate Government.
2. Allocation	Territorial.
3. Classification	Social Services.
4. Description of Scheme	Development of Education in the Bechuanaland Protectorate.
5. Total Cost	£272,069.
6. Colonial Development and Welfare Assistance required. (Grant in Sterling)	£159,117.
7. Basis of Administration for accounting purposes	
Capital	£ 139,675
Recurrent:	
Personal Emoluments	21,464
Other Charges	8,275
	£ 169,414
8. Basis of calculation of Colonial Development and Welfare Grant.	
	£
Capital 100%	139,675
Recurrent 1960/1961 100%	3,028
1961/1962 75%	9,175
1962/1963 50%	7,239
	£ 159,117

APPENDIX II

DEVELOPMENT OF EDUCATION

DETAILED ESTIMATES

Item No.	Details of Expenditure	1960/1961	1961/1962	1962/1963	Total 1960/1963	1963/1964	Total
		£	£	£	£	£	£
	CAPITAL						
1.	African Teacher Training College (including equipment)	30,000	24,790	-	54,790	-	54,790
2.	Practising Schools for Teacher Training College (including equipment)	18,400	-	-	18,400	-	18,400
3.	Extensions Teacher Training College, Lobatsi (including equipment)	-	-	-	-	5,380	5,380
4.	Extensions Moeng College (including equipment)	-	-	-	-	56,025	56,025
5.	Building and Equipment Grants, African Schools:-						
	(a) Catholic Mission	-	7,000	8,500	15,500	9,500	25,000
	(b) London Missionary Society	-	10,000	-	10,000	-	10,000
	(c) Anglican	-	-	-	-	5,000	5,000
6.	African primary schools, non-Tribal (including equipment)	-	-	9,735	9,735	-	9,735
7.	Extensions, Ghanzi European School (including equipment)	-	-	31,250	31,250	10,000	41,250
	TOTAL CAPITAL EXPENDITURE	£48,400	41,790	49,485	139,675	85,905	225,580
	RECURRENT.						
	(a) African Teacher Training College, Francistown.						
	PERSONAL EMOLUMENTS						
	Division I.						
8.	1 Principal (£636x30-816x36-1032x42-1242x48-1386)	222	898	933	2,053	969	3,022
	Carried Forward	£ 222	898	933	2,053	969	3,022

Item No.	Details of Expenditure	1960/ 1961	1961/ 1962	1962/ 1963	Total 1960/ 1963	1963/ 1964	Total
		£	£	£	£	£	£
	Brought Forward	222	898	933	2,053	969	3,022
	Division II.						
9.	1 Vice Principal (£636x30-816x36-1032x42-1158)	159	643	673	1,475	703	2,178
10.	2 Assistant Masters (Higher Grade)	318	1,286	1,346	2,950	1,406	4,356
	Division III.						
11.	3 Assistant Masters (Grade I)	168	680	734	1,582	810	2,392
12.	1 Boarding Master (Grade I)	56	226	244	526	270	796
13.	1 Clerk, Grade I	56	226	244	526	270	796
14.	1 Teacher (Female) Infant Methods	45	188	212	445	232	677
15.	1 Teacher (Female) Homecrafts	45	188	212	445	232	677
16.	1 Matron , Grade II	45	188	212	445	232	677
17.	1 Cook, Grade IV	24	99	111	234	123	357
18.	3 General Duty Assistants	37	150	150	337	150	487
	Allowances						
19.	Inducement Allowance	74	299	311	684	323	1,007
20.	Bechuanaland Protectorate Allowance	15	60	60	135	60	195
21.	Education Allowance	30	120	120	270	120	390
22.	Vice Principals Allowance	15	60	60	135	60	195
	TOTAL PERSONAL EMOLUMENTS	£ 1,309	5,311	5,622	12,242	5,960	18,202
	OTHER CHARGES.						
23.	Maintenance of College and Hostel	375	1,500	3,000	4,875	4,500	9,375
	TOTAL OTHER CHARGES	£ 375	1,500	3,000	4,875	4,500	9,375
	TOTAL RECURRENT EXPENDITURE	£ 1,684	6,811	8,622	17,117	10,460	27,577

Item No.	Details of Expenditure	1960/1961	1961/1962	1962/1963	Total 1960/1963	1963/1964	Total
		£	£	£	£	£	£
	(b) Practising School for Teacher Training Colleges.						
	PERSONAL EMOLUMENTS						
	Division I						
24.	10 Teachers (Male)	405	1,635	1,695	3,735	1,755	5,490
25.	10 Teachers (Female)	330	1,335	1,395	3,060	1,455	4,515
	Allowances.						
26.	Head Teachers	18	72	72	162	72	234
	TOTAL PERSONAL EMOLUMENTS	£ 753	3,042	3,162	6,957	3,282	10,239
	OTHER CHARGES						
27.	Equipment	100	400	400	900	400	1,300
	TOTAL OTHER CHARGES	£ 100	400	400	900	400	1,300
	TOTAL RECURRENT EXPENDITURE	£ 853	3,442	3,562	7,857	3,682	11,539
	(c) Extensions Ghanzi Boarding School.						
	PERSONAL EMOLUMENTS						
	Division I						
28.	1 Matron (£312x24-480)	90	366	390	846	412	1,258
29.	1 Housekeeper (£264x24-384)	66	270	294	630	318	948
	Allowances						
30.	Inducement	52	212	228	492	246	738
31.	Bechuanaland Protectorate	15	60	60	135	60	195
32.	Local	18	72	72	162	72	234
	TOTAL PERSONAL EMOLUMENTS	£ 241	980	1,044	2,265	1,108	3,373
	OTHER CHARGES						
33.	Hostel Running Expenses	250	1,000	1,250	2,500	1,500	4,000
	TOTAL OTHER CHARGES	£ 250	1,000	1,250	2,500	1,500	4,000
	TOTAL RECURRENT EXPENDITURE	£ 491	1,980	2,294	4,765	2,608	7,373

Item No.	Details of Expenditure	1960/ 1961	1961/ 1962	1962/ 1963	Total 1960/ 1963	1963/ 1964	Total
		£	£	£	£	£	£
	GRAND TOTAL RECURRENT EXPENDITURE	3,028	12,233	14,478	29,739	16,750	46,489
	CAPITAL EXPENDITURE	48,400	41,730	49,485	139,675	85,905	225,580
	TOTAL SCHEME	51,428	54,023	63,963	169,414	102,655	272,069
	Less Bechuanaland Protectorate contributions to Recurrent Expenditure (Nil 1960/1961, 25% 1961/1962, 50% 1962/1963, 75% 1963/1964)	-	3,058	7,239	10,297	12,561	22,858
		£ 51,428	50,965	56,724	159,117	90,094	249,211

NOTES ON ITEMS.

Item 1

The ill effects of the employment of very large numbers of unqualified teachers in primary classes are clearly evident from figures of enrolment by level of education and age given in successive annual reports. In 1958 total enrolment in African primary schools was 29,924 and of this number only 639 pupils had reached the final year of the primary school course. Only 399 of these pupils succeeded in passing the Standard VI examination.

2. Without taking into account the necessity for new appointments to cope with steadily increasing enrolment, the replacement of the 494 unqualified teachers now employed by qualified teachers would be possible at the present rate of progress in about 20 years time. A much speedier rate of replacement is obviously necessary and the establishment of a second Teacher Training College has therefore been given the highest possible priority in the department's development plan.

3. The existing College at Lobatsi in the Southern Protectorate has already reached maximum optimum size in relation to the availability of facilities for practical teaching and the annual output of trained teachers from this College is considerably less than half the territorial requirements.

Item 2

4. A feature of teacher training in the Protectorate is the large proportion of time devoted to closely supervised practical teaching. Direct control of practising schools by the Principal and staff of the Teacher Training College is therefore considered essential. Subject to approval of funds the new Teacher Training College will probably be built in Francistown, the administrative and commercial centre for the Northern Protectorate.

5. About 1,500 pupils attend African primary schools in Francistown but less than one-third are accommodated in classrooms. There is an urgent need for classrooms and equipment for two completely new schools and, to guarantee suitable and adequate facilities for practical teaching, it seems logical that Government should build and equip these two schools.

6. A precedent for this has been set at Lobatsi where the village school, which is used as a practising school by the Teacher Training College, has been built and is administered by Government. No departure from policy is involved as both Francistown and Lobatsi are outside the tribal reserves.

Item 3

7. It is proposed to add a manual instruction room, a library and a staff room to the Teacher Training College at Lobatsi. All are regarded as essential.

Item 4

8. Moeng College is one of the only two full secondary boarding schools in the Protectorate and it is proposed that the sum of £56,025 should be used to provide -

(i) a new hostel for 100 girls;

(ii) 4 African teachers' quarters;

(iii) a Domestic Science block consisting of a complete flatlet with two rooms, kitchen and bathroom;

(iv) a general Assembly Hall with stage, green rooms and cinema projection room;

(v) a lecture room with a capacity of 40 and a laboratory and store, for Agricultural training;

(vi) a small primary school for children of staff. The College is in a very isolated spot and the nearest primary school is six miles away on the other side of a range of hills.

Item 5

9. The surge in primary school enrolment to which reference has already been made will, before long, reach secondary level and it is essential now to plan for an extension of facilities at secondary and vocational schools. It is proposed therefore to assist missions planning to introduce or extend facilities for secondary education with building and equipment grants-in-aid. Missions concerned are -

(a) The Catholic Mission: This Mission is the only one actively conducting schools in the Territory. It runs 6 schools, including a full secondary co-educational institution, St.Joseph's College, at Khale.

The Mission has now been raised to the status of a Prefecture Apostolic and has prepared an ambitious scheme of educational development during the next five years.

After deletion of such items as expenditure in Tribal areas, staff housing, etc., it is estimated that the Mission has a legitimate claim for assistance towards expenditure of about £50,000. Very high educational standards are maintained by this Mission and Government assistance in the past has paid handsome dividends in the shape of sound education at low cost. On a pound for pound basis a grant of £15,500 during 1960/1963 (a further £9,500 is provisionally planned for 1963/1964) is recommended. This would provide assistance for the following extensions:-

(i) additional dormitories, Science block, library and laundry at St. Joseph's College;

(ii) hostel, classrooms and equipment at Francistown;

(iii) Domestic Science block and classroom at Ramoutsa.

(b) The London Missionary Society: This body, the pioneer Society in the Protectorate, previously conducted Tiger Kloof Institution, a large secondary and vocational institution, close to the borders of the Protectorate in the Cape Province.

Up to 200 Protectorate pupils were enrolled at Tiger Kloof, which the London Missionary Society has now been forced to abandon on account of the effects of the Union Bantu Education Act.

A grant of £10,000 under Colonial Development and

/Welfare

Welfare Scheme D.3478 has been approved to assist the Mission to build a junior secondary boarding school at Ootsi. Total cost was estimated at £25,000 but the Society has sold Tiger Kloof Institution and now wishes to institute a full secondary school offering courses up to and including matriculation, at a cost of over £50,000.

Such a school is necessary in view of anticipated educational development and a further grant of £10,000 is recommended.

(c) Anglican: This body is now showing an active interest in education and plans to open a junior secondary day school in Serowe. As there is a clear need for such a school in Serowe, which has a population of about 25,000, a grant of £5,000 is recommended.

Item 6

10. It is proposed to build 6-classroom schools with lavatories and offices at Gaberones and Lobatsi. Both villages are growing rapidly and, as they are in Crown Lands, provision of suitable facilities is a Government responsibility.

11. In Gaberones many children in the large Government camp cannot conveniently attend the neighbouring Batlokwa School as it is some distance away and is grossly overcrowded.

12. In Lobatsi the village school is used as a practising school for the Teacher Training College. It is overcrowded and extensions are required.

Item 7

13. The allocation of about 20 new farm holdings in the Ghanzi district will increase the population and provision of additional hostel and classroom accommodation will be essential.

14. A complete new dormitory block for boys is proposed, leaving the existing one for girls. The new block would contain a resident master's flat. Two additional classrooms are also required.

15. The school dining hall, which is used as an assembly hall, is very small and the building of a larger hall, to be used as an assembly hall or dining room or both, is regarded as essential.

Items 8 - 22

16. Standard rates of pay and allowances.

Item 23

17. This is based on the College opening in 1961/1962 with 30 students, increasing to 60 students in 1962/1963. The figures are calculated from costs at the existing Lobatsi Teachers' Training College.

Items 24 - 26

18. Standard rates of pay and allowances.

Item 27

19. Estimated cost of additional equipment required.

/Items 28 - 32

Items 28 - 32

20. Standard rates of pay and allowances.

Item 31

21. Based on an analysis of costs at the existing hostel.

ANNEXURE IV.

APPLICATION FOR A GRANT UNDER THE COLONIAL DEVELOPMENT AND WELFARE ACT FOR THE CONTINUATION OF GEOLOGICAL SURVEY IN THE BECHUANALAND PROTECTORATE FOR THE THREE-YEAR PERIOD 1960 TO 1963.

(a) General description of scheme and the advantages to be derived from it.

This is an application for funds from the Colonial Development and Welfare Fund for the purpose of continuing the Geological Survey of the Bechuanaland Protectorate for 3 years from April 1st, 1960 to March 31st, 1963. Under Colonial Development and Welfare Schemes D.940 and D.940 A-C grants totalling £184,693 were made from Central Funds to finance the Geological Survey from its inception in 1948 to 31st March, 1956. A further grant of £149,450 was then made under Colonial Development and Welfare Schemes D.2894 and D.2894A to continue the Geological Survey for the 4-year period, 1st April, 1956 to 31st March, 1960. Of this grant £111,965 was made from the Central Geological Allocation and £37,485 from the Territorial C.D. and W. allocation. In addition there was a local contribution at the rate of 25% of the recurrent costs in 1956/1957 and at 50% of the recurrent expenses for the remaining two years of the life of the scheme. It is estimated that the cost of continuing Geological Survey work in the Bechuanaland Protectorate for a further 3 years to March 31st, 1963 is £204,132. On the basis of a contribution from local funds of 75% of the recurrent expenditure in 1960/1961, and a 100% contribution towards recurrent costs in the final two-year period, 1961 to 1963, the Colonial Development and Welfare Fund grant required is £44,789.

2. Since its foundation the Geological Survey has worked under considerable difficulties due almost entirely to a shortage of professional staff and the position in this regard only improved slightly at the end of 1958. This has meant that throughout most of the period under review, while the range of activities of the Department increased to a great extent, the efficiency of the Geological Survey as a whole has suffered and to cope with certain important commitments it has been necessary to curtail the amount of work possible in several phases of the Department's activities. Progress has, however, been achieved in many spheres and the Geological Survey can point to a number of useful results achieved in the three main phases of its activities which are -

(a) the geological mapping of all the exposed areas in the Territory;

(b) mineral survey, including the survey of the potential coal resources of the Protectorate; and

(c) the development of underground water supplies.

3. Geological Mapping: A reconnaissance geological mapping programme was commenced in 1955 and the advances which are being made in the interpretation of the basic geology and fundamental structure of the Territory have been incorporated in annual issues of a provisional geological map of the Protectorate. An undoubted result of this work is the interest being shown by various mining groups in the potential mineral resources of the Territory and the number of Crown Grants and concessions which have recently been granted in different areas for prospecting and/or mining rights.

4. Mineral Survey: The estimation of the mineral resources of the Territory is one of the fundamental aims of the Geological

/Survey.

Survey.--The policy formulated for the 4-year period, 1956/1960, was to follow all clues as to possible mineral resources, foster the interest of mining companies, intensify general scout drilling by Departmental drills and continue coal exploration. Knowledge of the basic geology and structure of the Protectorate is fundamental to an assessment of the economic potential and once the more important of the previously known mineral deposits had been examined the Geological Survey commenced placing emphasis on the acquisition of this knowledge. The intensive investigation of mineral occurrences has also been hampered by the shortage of professional staff but useful results have been achieved in the estimation and development of the economic mineral resources of the Territory. Considerable interest in the mineral potential has been aroused following the dissemination of the information which has been accumulated as a result of Geological Survey work in the Protectorate and this, together with the mapping work referred to above has resulted in a number of Crown Grants and a mineral concession being made for prospecting and/or mining rights in various areas of the Territory.

5. In actual mineral survey work the following major items have been undertaken:-

(a) Coal Exploration: A detailed investigation of the coals in the central portion of the Morapule coalfield, 6 miles west of Palapye, has been completed. The reserves of coal, with calorific values of 11 to 12 lbs./lb. (average value 11.34 lbs./lb.) and ash contents of 12.0 to 18.8%, are of the order of 150.5 million tons. A detailed investigation is also in progress in the Mamabula area, south of Mahalapye in the Bamangwato Reserve.

(b) Asbestos: The Geological Survey continues to give advice and assistance to the company operating the Moshaneng asbestos mine, from which the Bangwaketse Tribal Treasury derives royalty revenue. The Department has just completed a core drilling programme to assist the company in their underground development work during the course of which promising fibre horizons were located. Two other asbestos occurrences have also been investigated,

(c) Evaporite deposits: A preliminary examination of the brine deposits in the Nata area of the Makarikari has been carried out and this survey produced evidence regarding the origin of the deposits and the mode of formation of the salt.

(d) Nickel: A geochemical and magnetic survey was carried out at the Magogaphate nickel occurrence in the north-eastern Bamangwato Reserve, which was located by the Geological Survey in 1953.

(e) Manganese: An occurrence of manganese ore was located by a geologist of the Department at Kgwakgwe, south of Kanye in the Bangwaketse Reserve, in April 1957. This occurrence was brought to the attention of mining concerns and subsequent negotiations led to the award of a Crown Grant to Marble Lime and Associated Companies for manganese rights which were eventually extended to cover the whole of the Bangwaketse Reserve. Mining activity commenced there in September 1957 and a total of 20,749 short tons of manganese ore has been produced from Kgwakgwe mine. Of this total production 9,060 short tons valued at £96,846 have been exported to date.

In the Bamalete Reserve manganese ore production has been in progress since the second half of 1957, initially from an occurrence south of Ramoutsa and since the beginning of 1959 from occurrences near Ootsi. The Geological Survey has assisted

/the

the company operating in this area by geological mapping of all manganese ore occurrences operated by the company and in addition carried out a core drilling programme at the Ramoutsa mine. A total of 9,840 short tons of manganese ore valued at £35,131 has been exported from the Bamalete Reserve since mining commenced in 1957.

6. Underground Water Development: The four-year, 1956/1960, Geological Survey scheme allowed for an expansion of the establishment to enable the Department to undertake hydro-geological work and thus play its correct role in the development of the underground water resources of the Territory. Good progress has been maintained in this work and excellent results have been achieved in certain areas. During the period under review the Geological Survey was responsible for geophysical surveys and site selection and field control of the Territorial underground water development programme financed by Colonial Development and Welfare Scheme D.2639. Under this programme a total of 65,477 feet was completed in 238 boreholes in the four major eastern Reserve areas. Of these 166 were successful representing an overall success ratio of 70%. In addition the Geological Survey has undertaken geological and geophysical surveys for and site selection of boreholes drilled by contract for a cattle route in the northern Protectorate, grazing supply boreholes in Ngamiland and boreholes for redistribution of stock in the south-central Kalahari. Site selection has also been undertaken for the "cattle route" drilling in the central Kalahari, for townships, Government institutions and village supplies and for the Rhodesia Railways. In the "cattle route" drilling the work carried out by the Geological Survey led to the development of potable supplies in the south-central Kalahari in an area where only highly saline supplies had been encountered previously. From 1957 the Geological Survey started to pay greater attention to the Departmental drilling programme, both as regards borehole siting and field control of drilling rigs. By 1958 the Department was undertaking siting for all Departmental rigs. From the 1st April, 1959, following a decision taken with the Geological Adviser to the Secretary of State, full control, including financial control, of the activities of the Boring Branch was transferred to the Director of Geological Survey from the Director of Public Works. The Geological Survey is now responsible for all water borehole drilling in the Territory and its role in underground water development work is the siting and drilling of boreholes to the stage where productive boreholes can be passed to the Public Works Department for equipping and maintenance.

During the period under review, to 31st December, 1959, a total of 370 water boreholes have been drilled, both by contract methods and Departmentally, on sites selected by officers of the Geological Survey. Of these 259 have been successful representing a success ratio of 70% for all areas in the Protectorate.

7. Future Programme: The estimates for the 3-year period, 1960/1963, are based on a continuation of the work which the Geological Survey has been undertaking in the past 4-year period and the three main objectives will remain as follows:-

(1) Reconnaissance geological mapping of the exposed areas of the Territory.

(2) Mineral survey and the estimation of the mineral resources of the Protectorate.

(3) Underground water development.

8. Geological Mapping: If the staff position can be

/maintained

maintained it is hoped that it will prove possible to speed up the tempo of the mapping programme. A very important facet of this work is the early publication of the results of the programme in order that information regarding the basic geology of the Territory can be disseminated as widely as possible amongst prospecting and mining organizations. Prior to this available funds have not permitted the publication of map sheets of areas already geologically surveyed but in the present scheme funds have been allowed for this important work.

9. Mineral Survey: The policy of the Survey will be to investigate all clues to the existence of possible mineral deposits and wherever possible to carry out detailed investigations to the stage where sufficient geological data has been obtained to attract the interest and attention of mining organizations. In view of the number of Crown Grants for prospecting rights which have been issued over the past few years, as a result of the interest shown by mining and prospecting organizations following earlier Geological Survey work, it is considered that the main emphasis should be placed on the rapid acquisition of knowledge concerning the basic geological formations of the Territory and their structure. Mineral survey work will be prosecuted jointly with the mapping programme and if encouraging prospects are located prior attention will be given to these. As in previous years all possible assistance will be rendered to mining companies and prospecting organizations. The policy of preparing Mineral Resources Reports to form a series of pamphlets on the mineral resources of the Protectorate will continue to be followed.

10. Underground Water Development: Considerable emphasis will continue to be placed on this important work. The economy of the Bechuanaland Protectorate is based chiefly on the raising of cattle for beef production and the provision of adequate watering points is a *sine qua non* in the development of this industry. Much work remains to be done in providing adequate water supplies for agricultural purposes and in village areas for the people themselves. The Geological Survey will continue to control the Drilling Branch and will also be responsible for geological and geophysical surveys for water borehole site selection for both Government drilling rigs and any drilling carried out by contract methods. The scheme has been framed in an attempt to increase the efficiency of the hydro-geological work carried out by the Department and if the staff position and other commitments allow it is hoped to commence investigations not only into the development of the underground water resources but also to undertake research on the estimation of the actual reserves of underground water in various areas in the Territory.

11. Laboratory and Headquarters Work: The laboratory will continue to play an essential part in the working of the Geological Survey. Approval has been given for the upgrading of a post of Scientific Assistant to that of qualified analytical chemist. Once an appointment has been made this should result in greatly increased efficiency. Greater attention will then be paid to pure geochemical work and the possibility of combining regional geochemical and mineralogical prospecting with normal quarter-degree square mapping. Attention will be given in the Drawing Office section to the preparation for publication of work already carried out and emphasis will be placed on the preparation of reports and bulletins to disseminate as widely as possible the information accumulated by the Department on the geology and mineral resources of the Protectorate.

12. General: The scheme has been drawn up to provide a balanced plan to enable the Geological Survey to carry out

/efficiently

efficiently work in all three main phases of its activities. The scope of work carried out by the Department has increased considerably over the past four-year period and the organization detailed in the estimates is essential to enable the Survey to cope with work falling within its sphere of activity. The cost of geological work in as large an area as the Bechuanaland Protectorate, with difficult conditions of transport and communications, is unavoidably high. In particular it is essential to provide reliable transport to maintain efficiency and ensure economic running of the organization as a whole, and provision is made for extensive replacement of worn-out vehicles.

(b) Relation of the proposed scheme to the Territory's Development Programme.

13. Continuance of the work of the Geological Survey is an essential part of the Development Plan for 1960/1964 and provisional provision has been made for it in the territorial allocation of C.D.W. funds for the period.

(c) Reasons for calling on Colonial Development and Welfare Funds.

14. Local resources are inadequate.

(d) Basis of division of cost between local funds and the Colonial Development and Welfare vote.

15. Capital expenditure will fall to the Colonial Development and Welfare vote. 75% of recurrent expenditure will be borne by local funds in 1960/1961 and 100% thereafter.

(e) Third Parties.

16. Not applicable.

(f) Availability of staff, etc.

17. Practically all the staff required are already serving in the Department.

(g) Capital Works.

18. Not applicable.

(h) Professional advice.

19. Departmental, following on the recommendations of Dr. Dixey, Adviser on Overseas Geological Surveys.

APPENDIX I.

GEOLOGICAL SURVEY

FINANCIAL SUMMARY

1. Administering Authority	Bechuanaland Protectorate Government.
2. Allocation	Territorial.
3. Classification	Surveys
4. Description of Scheme	Geological, Hydrological and Mineral Survey.
5. Total Cost	£270,590.
6. Colonial Development and Welfare Assistance required	£44,789.

7. Basis of Administration for Accounting Purposes

	£	£
1960/1963		
Capital		30,700
Recurrent		
Personal Emoluments	119,098	
Other Charges	54,334	
		173,432
		£ 204,132

8. Basis of calculation of claims where the grant or loan does not provide for 100% of the cost.

	£
100% of Capital Expenditure	30,700
Recurrent Expenditure 25% in 1960/1961	14,089
	£ 44,789

APPENDIX II.

GEOLOGICAL SURVEY

DETAILED ESTIMATES

Item No.	Details of Expenditure	1960/1961	1961/1962	1962/1963	Total 1960/1963	1963/1964	Total
		£	£	£	£	£	£
	CAPITAL.						
1.	Motor Vehicles and Accessories	10,000	4,500	6,000	20,500	2,450	22,950
2.	Camp Equipment	2,200	750	750	3,700	750	4,450
3.	Extensions to Offices and Stores	1,500	-	-	1,500	-	1,500
4.	Instruments and Laboratory Equipment	500	500	500	1,500	500	2,000
5.	Plant and Tools	300	300	300	900	300	1,200
6.	Publication of Geological Maps	1,000	700	700	2,400	1,000	3,400
7.	Office Equipment and Furniture	200	-	-	200	-	200
	TOTAL CAPITAL EXPENDITURE	£ 15,700	6,750	8,250	30,700	5,000	35,700
	RECURRENT.						
	PERSONAL EMOLUMENTS.						
	Division I.						
8.	1 Director, £1,650	1,650	1,650	1,650	4,950	1,650	6,600
9.	1 Deputy Director, £1,530	1,530	1,530	1,530	4,590	1,530	6,120
10.	7 Geologists, £696x30-816x36-1032x42-1242x48-1,386	6,164	6,400	6,654	19,218	6,902	26,120
11.	1 Chemist, £666x30-816x36-1032x42-1242x48-1386	786	816	852	2,454	888	3,342
	Carried forward	10,130	10,396	10,686	31,212	10,970	42,182

Item No.	Details of Expenditure	1960/ 1961	1961/ 1962	1962/ 1963	Total 1960/ 1963	1963/ 1964	Total
		£	£	£	£	£	£
	Brought forward	10,130	10,396	10,686	31,212	10,970	42,182
	Division II						
12.	1 Administrative Assistant, £726x30-816x36-1032	758	791	819	2,368	855	3,223
13.	1 Geological Draughtsman, £666x30-816x36-888	822	858	888	2,568	888	3,456
14.	1 Scientific Assistant, £666x30-816x36-888	696	726	756	2,178	786	2,964
15.	2 Senior Drillers, £756x30-816	1,632	1,632	1,632	4,896	1,632	6,528
16.	1 Drill Foreman, £636x30-786	786	786	786	2,358	786	3,144
17.	1 Prospector, £552x24-606x30-636	636	636	636	1,908	636	2,544
18.	1 Lady Clerk, £314x24-504	456	484	504	1,444	504	1,948
19.	1 Registry Clerk, £432x24-756x36-852	502	526	550	1,578	574	2,152
		£ 6,288	6,439	6,571	19,298	6,661	25,959
	Division III.						
20.	2 Clerks, Grade I	417	453	499	1,369	537	1,906
21.	1 Tracer, Grade I	282	308	332	922	356	1,278
22.	1 Artisan, Grade I	308	332	356	996	380	1,376
23.	1 Laboratory Assistant, Grade I	342	366	390	1,098	414	1,512
24.	1 Laboratory Assistant, Grade II	224	242	268	734	290	1,024
25.	1 Laboratory Assistant, Grade III	155	173	191	519	209	728
26.	1 Storeman, Grade III	161	179	197	537	215	752
27.	1 Learner Tracer, Grade III	164	182	200	546	218	764
28.	17 Motor Drivers, Grade II	3,242	3,669	3,939	10,850	4,207	15,057
29.	17 Lorry Labourers, Grade IV	1,582	1,881	2,059	5,522	2,231	7,753
30.	9 Campkeepers, Grade IV	1,162	1,256	1,308	3,726	1,320	5,046
31.	15 Artisans, Grade IV	1,791	1,991	2,072	5,854	2,130	7,984
32.	1 Messenger, Grade IV	130	150	150	430	150	580
33.	1 Nightwatchman, Grade IV	105	117	130	352	150	502
34.	Casual Labour	4,500	4,500	4,500	13,500	4,500	18,000
	Carried forward	£14,565	15,799	16,591	46,955	17,307	64,262

Item No.	Details of Expenditure	1960/1961	1961/1962	1962/1963	Total 1960/1963	1963/1964	Total
		£	£	£	£	£	£
	Brought forward	14,565	15,799	16,591	46,955	17,307	64,262
	GENERAL						
35.	Inducement Allowance	5,305	5,439	5,569	16,313	5,686	21,999
36.	Bechuanaland Protectorate Allowance	930	930	930	2,790	930	3,720
37.	Education Allowance	120	240	360	720	360	1,080
38.	Special Allowance (Ngamiland, etc.)	108	108	108	324	108	432
39.	Gratuities	216	400	870	1,486	230	1,716
	TOTAL PERSONAL EMOLUMENTS	£37,662	39,751	41,685	119,098	42,252	161,350
	OTHER CHARGES						
40.	Maintenance and Running of Motor Vehicles	3,000	3,000	3,250	9,250	3,500	12,750
41.	Maintenance and Running of Drills	2,000	2,000	2,000	6,000	2,000	8,000
42.	Fuels and Lubricants	3,000	3,000	3,000	9,000	3,000	12,000
43.	Travelling Expenses	6,000	6,000	6,000	18,000	6,000	24,000
44.	Passages	2,324	640	2,010	4,974	2,120	7,094
45.	Office and Incidental Expenses	300	300	300	900	300	1,200
46.	Books of Reference and Periodicals	120	120	120	360	120	480
47.	Office and Drawing Office Stationery	400	400	400	1,200	400	1,600
48.	Publications and Printing	600	600	600	1,800	600	2,400
49.	Laboratory Reagents and Glassware	250	250	250	750	250	1,000
50.	Coal Analysis	200	200	200	600	200	800
51.	Maintenance of Geophysical Equipment	200	200	200	600	200	800
52.	Maintenance of Office Grounds	25	25	25	75	25	100
53.	Uniforms and Clothing	275	275	275	825	275	1,100
	TOTAL OTHER CHARGES	£ 18,694	17,010	18,630	54,334	18,990	73,324

Item No.	Details of Expenditure	1960/ 1961	1961/ 1962	1962/ 1963	Total 1960/ 1963	1963/ 1964	Total
		£	£	£	£	£	£
	TOTAL RECURRENT EXPENDITURE	56,356	56,761	60,315	173,432	61,458	234,890
	TOTAL SCHEME	72,056	63,511	68,565	204,132	66,458	270,590
	Less Contribution from local funds	42,267	56,761	60,315	159,343	61,458	220,801
	Total Colonial Development and Welfare assistance required	£ 29,789	6,750	8,250	44,789	5,000	49,789

APPENDIX III.

GEOLOGICAL SURVEY

NOTES ON ITEMS

Item No.

1. £10,000 is allowed for in the first year for the purchase of two 1½-ton pick up trucks, three 5-ton diesel lorries, one tractor and trailer, one 7-ton 4-wheel drive diesel lorry and one 5 or 7-ton to be provided with a caboose body. £4,500 is allowed in the second year and £6,000 in the third year for further replacements of old vehicles. In the first year certain of the vehicles are needed for new staff, (one geologist released from post of chemist/petrologist following upgrading of one post of Scientific Assistant; Deputy Director, post created in 1959/1960 by upgrading one post of geologist; and one Scientific Assistant who will be stationed in the field) but the majority are for replacements for old vehicles whose ages range from 18 to 10 years old. In the second and third years further replacements of vehicles 8 to 10 years old will be necessary and the funds have been spread over the three-year period and provided for in a manner to strike the best balance between the use of new and old transport to minimise running costs and at the same time ensure peak efficiency of the Department's transport. With inadequate transport both time and money is wasted and the organization as a whole suffers. It must be remembered that Geological Survey transport is in constant use over very heavy and difficult country and under these conditions vehicles have a limited life.

2. Tentage and camp equipment will be required for new staff and provision has been made in the first year for caravans for all geologists and the scientific assistant. This will result in considerable savings in tentage costs over the life of the scheme. Provision has also been made in the first year for rondavel-type prefabricated houses for Division III officers working as drill crews and in the second and third years for gradual replacement of tents for drillers with prefabricated rondavels. These measures will result in overall savings as against the provision of tentage.

3. The Geological Survey is already short of office accommodation for two geologists and separate storage space is urgently required for delicate and expensive geophysical instruments. In addition the drawing office accommodation is proving hopelessly inadequate and an extension to this office to improve working conditions, and hence efficiency, is necessary.

4. Provision is made to allow for both replacement of old and worn out laboratory equipment and survey instruments, and the purchase of new items where necessary. The estimate is based on past experience of expenditure under this item.

5. The provision made under this item is in accordance with past expenditure on picks, shovels, drilling equipment, general plant needed at Headquarters, etc.

6. This is a new item to allow for the colour printing of geological maps for general distribution. As explained in the covering memorandum the publication, at as early a date as possible and to suitable scales, of geological maps of areas covered in the regional reconnaissance mapping programme is of fundamental importance with regard to general development

prerogative of Government geological surveys and mining and prospecting organizations rely on Government surveys to provide this basic data. They are in fact attracted to Territories where such published maps are available. The item has been introduced to cover the cost of this important work and to allow the geological information accumulated by the Geological Survey to be disseminated as widely as possible. The provision is based on estimates of the cost of this work provided by reliable printing firms and allows for the publication of 8 geological maps, probably on a degree-square basis, over the 3-year period.

7. Additional office furniture and equipment will be necessary in view of projected extensions to the headquarters offices and stores.

8. The figure given represents the basic salary of the Director.

9. The figure given represents the basic salary of the Deputy Director (authority for the introduction of this post was given in Outward Saving Telegram No.531 of 8th July, 1959, from the Secretary of State).

10. The figure has been computed on the basis of the salaries of the present incumbents and allowance has been made for an appointment to the existing vacancy.

11. Authority for the introduction of this post of Chemist, by upgrading one existing post of Scientific Assistant, was given in Outward Saving Telegram No.531 of 8th July, 1959, from the Secretary of State. Four extra increments have been allowed for possible previous experience.

12. Authority for the introduction of this post, by upgrading the existing post of Clerk, was also given in Outward Saving Telegram No.531 of 8th July, 1959. The figure given represents the probable starting salary of the incumbent.

13. The provision is based on the present salary of the incumbent.

14. C.D.W. Scheme D.2894 provided for 3 Scientific Assistants. Only one of these posts was filled between 1956 and 1960 because of the shortage of professional staff to undertake necessary supervisory duties. One of these posts has been upgraded to that of Chemist and it has been decided to re-introduce one post to assist officers engaged on geophysical surveys by relieving them of routine reading of instruments in the field. One extra increment has been allowed for possible experience.

15. The provision has been computed on the salaries of the present incumbents.

16. The figures given represent the salary of the present incumbent.

17. The figures given represent the salary of the present incumbent.

18. The figures are computed on the basis of the salary of the present incumbent.

19. The figures are based on the salary of the present incumbent.

20. The provision has been based on the salaries of the present incumbents. The Grade I salary scale is £132x18-240x 24-576.

21, 22 and 23. These posts are included in the present establishment and the figures are based on present salaries.

24. An existing post in the Grade II salary scale of £132x 18-240x24-336.

25. This is a new post introduced for an Assistant to the Grade I Laboratory Assistant. The duties of the incumbent will be to understudy the Grade I officer in the preparation of thin sections of rocks, etc. This work is at present being carried out by an Artisan Grade IV and this officer will be promoted to the Grade III post. The Grade III salary scale is £132x18-240.

26 and 27. Existing posts on the establishment.

28. Existing posts on the establishment in the Grade II salary scale £132x18-240x24-336.

29, 30, 31,
32 and 33. Existing posts on the establishment in the Grade IV salary scale of £84,12-132x18-150.

34. Past experience has shown that an adequate provision is necessary under this item in order that field investigations can be carried out efficiently. The figure provided is based on present expenditure under this item.

35. The provision represents the one-third inducement allowance to which Division I and the majority of Division II officers are entitled.

36. Calculated in accordance with the rates currently in force.

37. Provision has been made in respect of additional staff and for entitlements which will become due to serving officers.

38. A special allowance for officers carrying out extended field work in Ngamiland, the Kgalagadi district, etc.

39. Provision has been made for the entitlement of officers whose contracts will expire during the respective financial years.

40. The estimates are based on the past expenditure under this item and an increase has been made in the last year to cover greater expenditure consequent upon ageing of the vehicles.

41. Allowance has been made in accordance with past experience for the maintenance and running of two diamond drills and one combination shot and percussion drill.

42. This is a new item which has been introduced on the instructions of the Senior Auditor to ensure proper accounting procedure. The provision has been arrived at by reducing the amounts provided under Items 40 and 41.

43. The estimate for this item is higher than that shown in the estimates for D.2894 but these estimates proved hopelessly inadequate in practice and annual expenditure has, even with a shortage of staff, normally been in the region of £3,750 to £4,000

as against the old provision of £3,225. The new scheme shows a certain increase in staff. In addition, as a result of the Salaries Commission report, field allowances have been increased by 50%. With the introduction of a new post of Deputy Director additional Travelling and Transport Allowance has to be provided. One geologist is utilizing his own vehicle for field work and now that the Drilling Branch falls under the Geological Survey it is necessary for the Administrative Assistant to make regular visits to Gaberones. An increase in transport allowance has also to be allowed for here. In addition, during the 1956/1960 period, a field allowance for drillers was introduced which was not estimated for in the previous estimates. The provision made is in accordance with past expenditure and allowance has also been made for the increase in expenditure enumerated above.

44. The estimate is based on the various officers' overseas passage entitlements, including their railfare to the coast, and has been calculated for the various financial years in which these entitlements fall due.

45. Provision has been made as in the present Scheme.

46. Increased provision has been made in order to buy necessary reference books and periodicals and to allow for recent increases in prices and subscriptions. For more correct and easier accounting procedure this has been made a separate item and divorced from printing, etc.

47. The provision is in accordance with present expenditure. The item has been separated from Books and periodicals etc. for more correct and easier accounting procedure.

48. This item has also been made a separate item and the provision is higher than in the past as experience has shown that the previous figures have been inadequate. It is essential that the results of geological investigations should be published with the minimum delay as otherwise the value of Geological Survey in relation to development prospects is to a large extent mitigated against. The provision has been made to allow for the publication of an Annual Report and an annual series of Records, as at present, and one to two mineral resources reports and pamphlets depending on the scope of individual investigations. Printing costs have spiralled over the past few years and this increase has been taken into account in preparing the estimate.

49. Increased provision has been made in view of the fact that there will be a full time chemist at work in the laboratory.

50. A slight reduction has been made in this provision as once detailed investigations have been completed the number of samples for analysis will decrease.

51. Provision has been made as in the present scheme.

52. A token provision has been made in order that the Headquarters can be maintained in a neat and orderly manner.

53. The provision is based on past expenditure and the item has been introduced as a separate item on the instructions of the Senior Auditor to ensure correct accounting procedure.

ANNEXURE V.

APPLICATION FOR A GRANT UNDER THE COLONIAL DEVELOPMENT AND WELFARE ACT FOR THE CONTINUATION OF THE DEVELOPMENT OF UNDERGROUND WATER SUPPLIES BY THE DRILLING BRANCH OF THE GEOLOGICAL SURVEY IN THE BECHUANALAND PROTECTORATE FOR THE 3-YEAR PERIOD 1960 TO 1963.

(a) General description of the scheme and the advantages to be derived from it.

This is an application for funds from the Territorial Allocation of the Colonial Development and Welfare Fund for the purpose of continuing the development of underground water supplies by the Drilling Branch of the Geological Survey of the Bechuanaland Protectorate for 3 years from 1960 to 1963. The development of underground water supplies in the Bechuanaland Protectorate was financed over the five-year, 1955/1960, period by grants made under Colonial Development and Welfare Schemes D.2639, D.2639A, D.2639B, D.2639C and D.2639D. The grants totalled £411,628 and the total cost of the scheme over the 5-year, 1955/1960, period was originally estimated at £588,978. Over the 4-year,1956/1960, period the cost is estimated at £528,896. Towards this cost there was a local contribution at the rate of 25% of recurrent costs in 1956/1957, 50% in 1957/1958, 75% in 1958/1959 and 100% in 1959/1960. This provision provided an element not only for the cost of drilling boreholes in the development of underground resources but also funds to cover the cost of equipping successful boreholes developed during the drilling programme. Control of the scheme was vested in the Director of Public Works but, throughout, the actual siting of boreholes and the control of drilling in the field was vested in the Director of Geological Survey. Following a decision taken with the Geological Adviser to the Secretary of State it was decided to pass full control of the actual drilling section to the Director of Geological Survey while the Director of Public Works was to remain responsible for equipping and maintenance of successful boreholes. This transfer of control took place from April 1st, 1959, and the role of the Drilling Branch, under the Director of Geological Survey, in underground water development work is the drilling of boreholes to the stage where successful boreholes can be passed to the Director of Public Works for equipping and maintenance. This application, therefore, is for funds purely to cover the costs of the actual drilling and development of underground water supplies and does not include provision for the equipping or maintenance of successful boreholes developed. This will form an application under a separate scheme.

2. It is estimated that the cost of continuing the development of underground water supplies by the Drilling Branch over the 3-year, 1960 to 1963, period is £181,673. On the basis of a local contribution towards recurrent costs at the rate of 100% throughout the three-year period the Colonial Development and Welfare Fund grant required is £38,650.

3. The scheme for developing boreholes over the 1956/1960 period was described in memorandum C.D.W. (D) 3466. This work was accomplished by both contract drilling and Departmental drilling. Departmental drilling was however carried out under a number of difficulties which necessarily affected the amount of drilling possible. The chief difficulty throughout the period was the bad state of the Drilling Branch's transport which resulted in frequent breakdowns with consequent lengthy and costly drilling delays. Because of the transport position it was necessary to keep at least two rigs unmanned for much of the period under review and

/in

ANNEXURE V.

in addition in the early years of the scheme difficulty was experienced in recruiting qualified drillers. The contract drilling was largely concentrated in an area within 150 miles of the railway line and in any one development area the individual boreholes were relatively closely spaced. The Departmental drilling on the other hand was mainly carried out in remote areas of the Protectorate with undeveloped, and in parts non-existent, communications. Long distances normally separated individual drilling sites. A great deal of the drilling carried out was of an experimental nature to test various geological formations in the Central Kalahari which inevitably led to a high percentage of failures in certain areas.

Statistics of Drilling Results in the 1955/1960 period.

	1955/56		1956/57		1957/58		1958/59		1959/ Dec.31 1959		Total 1955/1959 Dec. 31	
	A	B	A	B	A	B	A	B	A	B	A	B
Drilling Branch	62	44	51	24	67	35	43	34	53	34	276	171
Contract Drilling	-	-	66	46	58	35	120	84	26	17	270	182
Total boreholes	62	44	117	70	125	70	163	118	79	51	546	353

A Number of boreholes drilled.

B Number of successful boreholes.

The total footage drilled in the period 1st April, 1955, to 31st December, 1959, and the quantity of water developed are as follows:-

	Total footage drilled in feet	Total quantity of water developed in gallons per hour.
Drilling Branch	68,599	188,073
Contract Drilling	74,569	139,590
Totals	143,168 feet	327,663 g.p.h.

4. Future Programme: The present scheme for the 3-year period, 1960 to 1963, is based on a continuation of the work the Drilling Branch has been undertaking in the past 5-year period and is also designed to increase efficiency wherever possible. The aim in the 1960/1963 period is to bring the complement of drillers to full strength and maintain all drilling rigs in operation throughout the period. The scheme has been prepared to allow long overdue overhauls to drilling rigs to be carried out to ensure maximum operating efficiency. Certain of the drilling rigs have been operating for over twelve years without a major overhaul and possible mechanical breakdowns must be guarded against. To be effective and economic a drilling rig must be continuously in operation and mechanical breakdowns and other delays must be reduced to a minimum. Adequate and reliable transport is a

fundamental necessity and this has been considered in preparing the scheme. Machines must always be available to cope with emergencies which may arise, subject to this, it is the intention in future programmes to group drilling machines wherever possible and thus increase footage rates while reducing drilling costs. Drilling costs in a Territory such as the Bechuanaland Protectorate are unavoidably high but the scheme has been drawn up to provide a balanced plan to enable the Drilling Branch to operate as efficiently as possible.

(b) Relation of the proposed scheme to the Territory's Development Programme.

5. The provision of additional water supplies is fundamental to the development of the Territory, is an integral part of the Development Plan for 1960/1964 and a provisional allocation of funds from the territorial C.D.W. allocation has been made.

(c) Reasons for calling upon Colonial Development and Welfare Funds.

6. The necessary funds cannot be made available from the territory's budget, which is grant-aided.

(d) Basis of division of cost between local funds and the Colonial Development and Welfare vote.

7. All recurrent charges will be met from local funds.

(e) Third Parties.

8. Not applicable.

(f) Availability of staff, materials and labour.

9. The staff required are already in the service of the Department.

(g) Capital Works.

10. Not applicable.

(h) Professional Advice.

11. The scheme is based on departmental professional advice.

APPENDIX I.

UNDERGROUND WATER DEVELOPMENT

FINANCIAL SUMMARY

1. Administering Authority	Bechuanaland Protectorate Government.
2. Allocation	Territorial.
3. Classification	Water Development.
4. Description of Scheme	Development of Underground Water Supplies - Drilling Branch.
5. Total Cost 1960/1964	£236,414.
6. Colonial Development and Welfare Assistance required	Grant of £38,650.

7. Basis of Administration for accounting purposes

1960/1963

	£	£
Capital		38,650
Recurrent		
Personal Emoluments	29,331	
Other Charges	58,442	143,023
		£181,673

8. Basis of calculation of claim where grant does not provide for 100% of cost

	£
100% of Capital Expenditure	38,650
Contribution to Recurrent expenditure - nil	-
Total	£ 38,650

APPENDIX II

UNDERGROUND WATER DEVELOPMENT

DETAILED ESTIMATES

Item No.	Details of Expenditure	1960/1961	1961/1962	1962/1963	Total 1960/1963	1963/1964	Total
		£	£	£	£	£	£
	CAPITAL						
1.	Motor Vehicles and Accessories	17,550	2,050	2,400	22,000	1,200	23,200
2.	Replacement jackshafts	600	-	-	600	-	600
3.	Replacement engines	2,450	-	-	2,450	-	2,450
4.	Tools and tanks	3,450	2,750	2,750	8,950	2,750	11,700
5.	Tentage and Camp Equipment	1,500	750	250	2,500	550	3,050
6.	Government assisted boreholes	500	500	500	1,500	500	2,000
7.	Radio Transmitters and Receivers	650	-	-	650	-	650
	TOTAL CAPITAL £	26,700	6,050	5,900	38,650	5,000	43,650
	RECURRENT						
	PERSONAL EMOLUMENTS						
	Division II.						
8.	1 Drill Superintendent, £960x36-1032	1,032	1,032	1,032	3,096	1,032	4,128
9.	1 Assistant Drill Superintendent, £852x36-924	924	924	924	2,772	924	3,696
10.	1 Senior Driller, £756x30-816	816	816	816	2,448	816	3,264
11.	10 (Drill Foremen, £636x30-786 / Drillers £528x24-576 / Learner Drillers, £408x24-504)	7,196	7,368	7,472	22,036	7,556	29,592
12.	1 Clerk/Storekeeper, £432x24-576x30-816x36-852	504	528	542	1,574	576	2,150
		10,472	10,668	10,786	31,926	10,904	42,830
	Division III						
13.	14 Lorry Drivers, Grade II	2,600	2,936	3,272	8,808	3,608	12,416
14.	14 Lorry Labourers, Grade IV	1,680	1,848	2,016	5,544	2,184	7,728
15.	42 Semi-skilled Labourers, Grade IV	5,040	5,208	5,316	15,564	5,484	21,048
16.	Casual Labour (Daily paid)	500	500	500	1,500	500	2,000

Item No.	Details of Expenditure	1960/1961	1961/1962	1962/1963	Total 1960/1963	1963/1964	Total
		£	£	£	£	£	£
	Brought forward	9,820	10,492	11,104	31,416	11,776	43,192
	GENERAL						
17.	Education Allowance	1,296	1,296	1,296	3,888	1,296	5,184
18.	Bechuanaland Protectorate Allowance	780	780	780	2,340	780	3,120
19.	Local Allowance (Kgalagadi, Ngamiland, etc.)	500	500	500	1,500	500	2,000
20.	Inducement Allowance	3,491	3,556	3,599	10,646	3,635	14,281
21.	Gratuities	800	800	1,265	2,865	440	3,305
	TOTAL PERSONAL EMOLUMENTS	£ 27,159	28,092	29,330	84,581	29,331	113,912
	OTHER CHARGES.						
22.	Fuels and Lubricants	4,000	4,000	4,000	12,000	4,000	16,000
23.	Borehole Casing	2,600	3,500	3,500	9,600	3,000	12,600
24.	Spares and Repairs to Drills	4,000	4,500	5,000	13,500	5,000	18,500
25.	Maintenance and Running of Vehicles	4,000	4,000	4,500	12,500	5,000	17,500
26.	Travelling Expenses	1,510	1,510	1,510	4,530	1,510	6,040
27.	Railage and Freight	1,500	1,500	1,500	4,500	1,500	6,000
28.	Incidental Expenses	150	150	150	450	150	600
29.	Medical Requirements	100	100	100	300	100	400
30.	Radio Maintenance	50	50	50	150	50	200
31.	Stationery and Office Requirements	100	100	100	300	100	400
32.	Passages	-	-	612	612	-	612
	TOTAL OTHER CHARGES	£13,010	19,410	21,022	58,442	20,410	81,852
	TOTAL RECURRENT EXPENDITURE	£45,169	47,502	50,352	143,023	49,741	192,764
	TOTAL SCHEME	£71,869	53,552	56,252	181,673	54,741	236,414
	Less Contribution from local funds	45,169	47,502	50,352	143,023	49,741	192,764
	Total Colonial Development and Welfare Assistance required.	£26,700	6,050	5,900	38,650	5,000	43,650

APPENDIX III

DEVELOPMENT OF UNDERGROUND WATER SUPPLIES - DRILLING BRANCH

NOTES ON ITEMS

Item No. 1

£17,550 is allowed for in the first year to purchase seven tractors and trailers, one 4-wheel drive tractor, six 5-ton diesel lorries and one 1½-ton pickup truck. £2,050 is allowed in the second year for the purchase of one 5-ton diesel lorry and one 1½-ton pickup truck. £2,400 is provided in the third year for two 5-ton diesel lorries. The large provision in the first year is essential if the Drilling Branch is to operate efficiently from the start of the scheme. As explained in the covering memorandum the bad state of the Drilling Branch's transport has been and still is responsible for numerous drilling delays. The majority of the vehicles are over 15 years old and none can be repaired to 100% efficiency. The intention is to replace the heavy six-wheel vehicles by tractors and trailers. Drilling rigs must necessarily be accompanied by two vehicles and each rig will also be supplied with a 5-ton diesel lorry. Five are needed now and the sixth is required for the Senior Driller. The 4-wheel drive tractor is needed for the heavy 60 RL Ruston Bucyrus deep capacity machines which standard tractors are unable to tow. The pickup truck is required for supervisory work by the senior members of the staff. All this transport will be required to work under arduous conditions in remote areas where roads are frequently non-existent. It is essential to estimate for replacement transport if efficiency is to be maintained and allowance has been made in the final two years of the scheme.

Item No.2

Seven of the drilling rigs have been continuously in commission for 14 years and two require new jackshafts to be fitted if they are to serve for a further 3-year period. The figure shown in the estimates is the cost of replacing these jackshafts.

Item No. 3.

The seven rigs which have been in commission for 14 years all require new engines if they are to operate for another 3 years and provision has been made for their replacement.

Item No. 4

This item covers the cost of drilling tools, fishing tools, tanks, etc. Many of the tools in present use have been in use for many years and are becoming worn out. It is false economy to use worn out drilling tools as this leads in the end to far greater expenditure when the drilling tools are lost down boreholes. The provision in the first year has been increased to allow urgently required replacements to be purchased.

Item No. 5

Drilling staff have to live continuously in the field and it is essential to provide these officers with adequate field accommodation. The intention is to replace tentage with prefabricated rondavel type houses to give officers and their families greater comfort in the field and at the same time to reduce heavy

/recurring

recurring expenses on tentage. These prefabricated rondavel type houses will also be provided for Division III officers. Tentage cannot be dispensed with altogether and provision has also been made for necessary tents and ancillary camp equipment.

Item No. 6

The provision is made to cover the cost of any boreholes drilled and for which Government becomes liable in terms of Government Notice No. 22 of 1948.

Item No. 7

This is a new item which has been introduced to improve communications with officers in remote areas to avoid drilling delays. Radio communication is already used with drilling rigs in certain areas and has proved its value. The transmitters being used are old ex-Army stock in need of replacement and provision has been made to enable all rigs working in areas away from communications to be supplied with a transmitter. The provision has been made by effecting a reduction in the provision for tools and tanks.

Item No. 8

The figures given represents the basic salary of the Drill Superintendent. This officer was formerly on the staff of the Public Works Department, but with the transfer of control of the Drilling Branch to the Geological Survey his post has been included in the estimates for the Drilling Branch.

Item No. 9

The figures given represent the basic salary of the Assistant Drill Superintendent.

Item No. 10

The figures have been computed on the basis of the basic salary of the present incumbent.

Item No. 11

The provision has been based on the basic salaries of the existing establishment and provision has been made for the one vacancy.

Item No. 12

This is a new post to supervise accounts and stores at Drilling Branch headquarters at Gaberones. At present these are controlled from Lobatsi and the existing system leaves much to be desired. The Stock Verifier has strongly recommended the introduction of this post in view of the quantity and nature of the stores necessarily carried.

Item No. 13

Existing posts on the establishment in the Grade II salary scale of £132x18-240x24-336.

Items 14 and 15.

Existing posts on the establishment in the Grade IV salary scale of £84-12-132x18-150.

/Item 16

Item No. 16

Past experience has shown that it is essential to provide for daily paid labour and the estimate is in accordance with past expenditure.

Item No. 17

The provision is based on entitlements at present paid to officers on the establishment and allowance has been made for the existing vacancy.

Item No. 18

The estimate is in accordance with rates currently in force.

Item No. 19

This is a special allowance payable to officers working in the Kgalagadi district, Nganiland and Ghanzi.

Item No. 20

The provision is calculated on the one-third inducement allowance to which the Division II officers are entitled.

Item No. 21

Provision has been made for the payment of necessary gratuities on the termination of individual contracts.

Item No. 22

The estimate is in accordance with past expenditure. A slight reduction has been made as the new transport will be more economical to run than the old and ageing vehicles used at present.

Item No. 23

The estimates have been computed on the likely expenditure to be incurred under this item in the light of past experience. The initial provision is lower than in the succeeding years because of stocks of casing on hand.

Item No. 24

Allowance has been made for the cost of maintaining 10 percussion drills. In the first year, seven of the rigs will be fitted with new engines and two with new jackshafts. Maintenance costs can be expected to increase and increased provision has been made in the second and third years.

Item No. 25

With the provision of new vehicles it is hoped that maintenance costs will decrease and the estimate is lower than formerly. An increase is allowed for in the third year when the great number of the vehicles will have completed a high mileage figure under arduous running conditions.

Item No. 26

The estimate is higher than formerly in view of the fact

that all Drillers are now paid a commuted Field Allowance. Provision has also been made for transport and field allowances for the Drill Superintendent and field allowance for the Assistant Drill Superintendent.

Item No. 27

The provision is made according to past experience of expenditure under this item.

Item No. 28

Provision has been made, with a slight reduction, as in the present scheme.

Item No. 29

This item has been introduced to cover the cost of necessary medical items which must be carried by all drillers in the field. It must be borne in mind that these officers normally work in remote areas at long distances from medical aid.

Item No. 30

A new item introduced to cover the cost of purchasing spares to maintain field radio equipment.

Item No. 31

In previous schemes no separate provision was made for essential office stationery and equipment and the necessary estimates are shown.

Item No. 32

The Drill Superintendent is entitled to overseas passage allowance and the necessary provision has been made.

ANNEXURE VI.

APPLICATION FOR COLONIAL DEVELOPMENT AND WELFARE GRANT FOR DEVELOPMENT OF MEDICAL SERVICES IN THE BECHUANALAND PROTECTORATE

(a) General description of scheme and the advantages to be derived from it.

The Territory's very limited resources make it impossible to provide from local funds many urgently required medical facilities, and Colonial Development and Welfare assistance is therefore sought for a number of immediate requirements. The notes on the items explain in detail the reasons why assistance is being sought, except the need for trypanosomiasis control work; which is dealt with below.

2. The control of tsetse fly generally is the subject of a separate application, but there are two related problems not covered by the Tsetse Fly Control scheme. These are investigations into human and animal trypanosomiasis. The cost of the veterinary trypanosomiasis work is also the subject of a separate application.

3. Human trypanosomiasis is becoming an increasing problem in Ngamiland. The number of cases admitted to hospital in recent years has been:-

1954	2
1955	4
1956	9
1957	19
1958	71

Treatment has however been very effective and only 4 cases died in 1958. Nevertheless, the aim is to diagnose cases in their early stages and treat them immediately. To do this, extensive surveys, involving miscroscopical work and clinical examination, and carried out in the various villages, are necessary. A mobile unit for field work is required, together with a laboratory at Maun to examine slides, etc. The project is supported by Dr. Lewis, the World Health Organisation expert who visited Ngamiland last year, and by the Economic Survey Mission. The costs have been kept to the minimum necessary to provide reasonable facilities for the survey and amount only to £2,000 capital and some £2,500 a year recurrent - a small amount for an undertaking of such importance to the inhabitants of Ngamiland.

(b) Relation of scheme to Territory's Development Programme.

4. Provision has been made in the Development Plan for the amount requested.

(c) Reason for calling on Colonial Development and Welfare Funds.

5. The scheme is an integral part of the 1960/1964 Development Plan for the Territory and provisional provision has been made from the territorial allocation of C.D.W. funds for the period.

(d) Basis of division of costs between local funds and Colonial Development and Welfare vote.

Capital Expenditure	100% C.D.W.
Recurrent Expenditure	100% C.D.W. in 1960/1961, 75% C.D.W. in 1961/1962, and

/50%

50% in 1962/1963.

(e) Third Parties.

Not applicable.

(f) Availability of staff, material, labour.

The building work involved will either be undertaken by the Public Works Department, or by contract after call for public tender under supervision of the Public Works Department.

(g) Capital Works.

The building work involved will either be undertaken by the Public Works Department, or by contract, as above.

(h) Professional Advice.

The scheme is based on departmental professional advice.

APPENDIX I.

DEVELOPMENT OF MEDICAL SERVICES.

FINANCIAL SUMMARY.

1. Administering Authority	Bechuanaland Protectorate Government.
2. Allocation	Territorial.
3. Classification	Development of Medical Services.
4. Description of Scheme	Development of Medical Services.
5. Total Cost	£83,107.
6. Colonial Development and Welfare Assistance required	£61,301.

7. Basis of Administration for Accounting purposes

	£
Capital	40,450
Recurrent	29,946
Total	£70,396

8. Basis of calculation of Grant required

			£	£
Capital	100%			40,450
Recurrent	1960/61	100%	5,954	
	1961/62	75%	8,704	
	1962/63	50%	6,193	
				20,851
				£ 61,301

9. Any other Accounting Instructions — Nil.

APPENDIX II.

DEVELOPMENT OF MEDICAL SERVICES

DETAILED ESTIMATES

Item No.	Details of Expenditure	1960/1961	1961/1962	1962/1963	Total 1960/1963	1963/1964	Total
		£	£	£	£	£	£
	CAPITAL						
	Buildings - General.						
1.	Extensions to Mental Home, Lobatsi	7,000					
2.	Buildings for Leper Settlement, Maun	10,000					
3.	Alterations and Extensions, Francistown Hospital		2,000				
4.	Laboratory, Lobatsi		3,850				
5.	Increased Storage at Mafeking		2,200				
6.	Kit Room, Mahalapye		550				
7.	Buildings, Kanye Mission	10,000					
8.	X-ray Unit and Buildings, Ghanzi		2,000				
9.	Demonstration Room, Lobatsi		850				
	Trypanosomiasis Control.						
10.	Purchase of Vehicle and Accessories		1,000				
11.	Purchase of Laboratory Equipment		1,000				
	TOTAL CAPITAL EXPENDITURE	£27,000	13,450		40,450		40,450
	RECURRENT.						
	PERSONAL EMOLUMENTS						
	GENERAL						
	Division I.						
12.	Assistant Medical Officer of Health, £852x36-1032x42-1242x48-1386	976	1,326	1,362	3,664	1,386	5,050
	Division II.						
13.	Laboratory Technician, £606x30-816x36-852	-	567	779	1,346	823	2,169
14.	Lady Clerk, £312x24-504	312	336	360	1,008	384	1,392
	Carried forward	£ 1,288	2,229	2,501	6,018	2,593	8,611

Item No.	Details of Expenditure	1960/1961	1961/1962	1962/1963	Total 1960/1963	1963/1964	Total
		£	£	£	£	£	£
	Brought forward	1,288	2,229	2,501	6,018	2,593	8,611
	Division III.						
15.	1 Laboratory Assistant, Grade I	-	132	150	282	168	450
16.	1 Sanitary Inspector, Grade I	132	150	168	450	186	636
17.	2 Dispensers, Grade I	264	300	336	900	372	1,272
18.	4 General Duty Assistants @ £60 p.a.	240	240	240	720	240	960
	Allowances:						
	(a) Inducement	467	743	834	2,044	865	2,909
	(b) Bechuanaland Protectorate	45	105	120	270	120	390
	(c) Ngamiland and Chobe	96	168	168	432	168	600
	(d) Education	-	120	120	240	120	360
	Trypanosomiasis Control.						
	Division I						
20.	1 Medical Officer, £852x36-1032x42-1242x48-1386	1,200	1,242	1,290	3,732	1,338	5,070
	Division III						
21.	1 Driver, £132x18-240x24-336	132	150	168	450	186	636
22.	1 Microscopist, £132x18-240x24-336	132	150	168	450	186	636
23.	1 Clerk, £132x18-240x24-336	132	150	168	450	186	636
24.	1 Lorry Labourer, £84x12-132x18-150	84	96	108	288	120	408
25.	1 General Duty Assistant @ £60 p.a.	60	60	60	180	60	240
	Allowances:						
	(a) Inducement	400	414	430	1,244	446	1,690
	(b) Bechuanaland Protectorate	60	60	60	180	60	240
	(c) Ngamiland and Chobe	132	132	132	396	132	528
	(d) Education	120	120	120	360	120	480
	TOTAL PERSONAL EMOLUMENTS	£4,984	6,761	7,341	19,086	7,666	26,752

Item No.	Details of Expenditure	1960/1961	1961/1962	1962/1963	Total 1960/1963	1963/1964	Total
		£	£	£	£	£	£
	OTHER CHARGES						
27.	General Stores, (Drugs, dressings, uniforms)	20	1,045	1,045	2,110	1,045	3,155
28.	Maintenance of Lunatics	-	1,000	1,000	2,000	1,000	3,000
29.	Maintenance of Lepers	-	1,000	1,000	2,000	1,000	3,000
30.	Travelling Expenses (including Commuted Allowances)	100	250	300	650	300	950
31.	Transport	100	250	250	600	250	850
	Trypanosomiasis Control						
32.	Maintenance and Running of Vehicles	-	400	400	800	400	1,200
33.	Experimental Animals and Maintenance	100	100	100	300	100	400
34.	General Stores, Drugs, preventive medicines, camping equipment	100	150	200	450	200	650
35.	Travelling Expenses	250	300	350	900	350	1,250
36.	Transport	200	250	300	750	300	1,050
37.	Incidentals	100	100	100	300	100	400
	TOTAL OTHER CHARGES	£ 970	4,845	5,045	10,860	5,045	15,905
	TOTAL RECURRENT EXPENDITURE	5,954	11,606	12,386	29,946	12,711	42,657
	TOTAL CAPITAL EXPENDITURE	27,000	13,450	-	40,450	-	40,450
	TOTAL CAPITAL AND RECURRENT EXPENDITURE	32,954	25,056	12,386	70,396	12,711	83,107
	Less Contribution from Bechuanaland Protectorate (25% 1961/1962; 50% 1962/1963; of Recurrent Expenditure	-	2,902	6,193	9,095	9,533	18,628
	TOTAL SCHEME £	32,954	22,154	6,193	61,301	3,178	64,479

APPENDIX III

DEVELOPMENT OF MEDICAL SERVICES

NOTES ON ITEMS

Item 1 : Extension to Mental Home, Lobatsi.

Although it is only a short time since an extension of 6 cells was added to this institution, there is still a demand for lunatic accommodation. Provision has been made for the addition of 12 cells to the present building.

Item 2 : Leper Settlement, Maun.

Many years ago the Seventh Day Adventist Mission Hospital at Maun provided medical care for a small leper colony. With the withdrawal of the Seventh Day Adventist Medical facilities, the colony was closed down, and since then all lepers have been sent to the Basutoland leper settlement at Botsabelo. This practice is not satisfactory as the lepers have to be transported there at much inconvenience and naturally do not like leaving the Bechuanaland Protectorate. Further, representations have been made to the effect that more cases, which are known to exist in Ngamiland, would present themselves for treatment if they knew that they could be treated locally.

Provision has, therefore, been made for a settlement of a self-contained type, to accommodate 40 patients.

Item 3 : Francistown Hospital - extensions and alterations.

This hospital, which is one of the busiest in the Territory, is not only overcrowded, but has no separate accommodation for medical and surgical patients. In the past, this matter was not of great importance, but the hospital has now reached a size when such separation is essential. Further, the standard of nursing education is being raised with intention of recognition by the High Commission Territories Nursing Council of the Bechuanaland Protectorate hospitals as teacher hospitals. Separate accommodation for such patients is a *sine qua non* for such recognition, and a new ward for male patients is essential.

Item 4 : Laboratory Lobatsi.

For many years all pathological work has been performed for the department by the South African Institute for Medical Research, Johannesburg, for which a fee of £1,000 per annum is paid. Although this arrangement, which was made over 20 years ago, when the total number of investigations per annum was small has proved better than nothing, it is unsatisfactory both on the score of delay (results are rarely returned in less than 10 days) and uncertainty, for many specimens are reported as being useless for examination owing to delay in transit. Both these undesirable factors could be eliminated by the provision of a small territorial laboratory, situated probably at Lobatsi.

Item 5 : Extra storage - Headquarters.

More storage room is urgently required at headquarters. Although the new store was built only three years ago, it is proving inadequate for present stocks and with the development of the service more space will be required. Stocks are now being bulk purchased and most of the requirements for the outstations are supplied from head-

quarters. The policy of bulk buying shows a saving over small purchases and on requisitioning, immediate supply to the stations. Small accounts are reduced to a minimum and supplies are under stricter control.

Item 6 : Kit Room - Mahalapye.

At present there are no facilities for storage of patients' belongings at this health centre. When the building was erected it was not anticipated that so many in-patients would be admitted. Present storage facilities are entirely inadequate and will be more so when the tuberculosis shelter is in use.

Item 7 : Seventh Day Adventist Mission, Kanye - Building.

Provision has been made for extra bed accommodation at the Seventh Day Adventist hospital, owing to the closing down of the Moffat Hospital centre.

Item 8 : Ghanzi - X-ray Unit and Buildings.

Ghanzi Health Centre is one of the most isolated, the nearest station with an x-ray unit being Maun, 200 miles away. Now that a Medical Officer is permanently stationed at Ghanzi, the provision of such a unit is considered essential, especially in connection with the rising incidence of tubercular infection.

Item 9 : Demonstration Room - Lobatsi.

At the beginning of 1959 the nursing curriculum was switched to a four-year course. A lecture room has already been erected and now serves for all teaching purposes. A demonstration room, which can be used solely for practical work, will be needed so that the Sister-Tutor need not clear the lecture room for practical demonstrations every time the latter are required.

Item 10 : Trypanosomiasis Control.

See "General Description"of Scheme.

B. PERSONAL EMOLUMENTS.

Item 12 : Assistant Medical Officer of Health.

With the rapid expansion of preventive health services, the burden upon the Medical Officer of Health will shortly be more than one officer can carry. It is proposed, therefore, to establish one post of Assistant Medical Officer of Health at one of the divisional headquarters, probably in the north.

Item 14 : Lady Clerk for Medical Officer of Health.

The increasing volume of office work in connection with the preventive services requires the services of a whole-time lady clerk. Hitherto, daily paid labour has been employed when considered necessary, but the expansion of the activities of the division now requires a permanent clerical employee.

Item 16 : Sanitary Inspector (African).

One extra post is required in connection with the appointment of Assistant Medical Officer of Health.

Item 17 : Dispensers.

number includes no relieving staff. The volume of dispensing work has increased so much of late years, that provision of relieving staff has become a necessity.

Item 18 : General Duty Assistants.

These will be needed in connection with the increased accommodation at Lobatsi Mental Home and alterations and extensions at Francistown.

ANNEXURE VII.

APPLICATION FOR COLONIAL DEVELOPMENT AND WELFARE FUND GRANT TO PROVIDE FOR DEVELOPMENT OF ROADS AND BRIDGES IN THE BECHUANALAND PROTECTORATE

(a) Description of Scheme - Objects and Advantages.

The object of this application is to seek financial assistance from the Colonial Development and Welfare Fund to continue the programme of road and bridge development commenced under Schemes D.2632/A/B/C and D.

2. The condition of the roads was described by Sir Alexander Symon in 1954 as "in general, deplorable". Today, with the construction of bridges and culverts, grading, gravelling and other improvements carried out under D.2632, the main north-south road, and certain major feeder roads, can be regarded as fair class earth roads. Many of the tracks across the Kalahari have been straightened and graded, and although they are still unsuitable for lighter vehicles, heavier vehicles are now able to proceed at higher speeds and with greater ease. Nevertheless, the average time taken to travel between centres off the main road is still great in relation to the distance, e.g. it is good travelling to reach Maun from Francistown (313 miles) in 12 hours, or Ghanzi from Lobatsi (410 miles) in less than two days, while Ghanzi-Maun (179 miles) is a long day's journey. Owing to the poor communications between Ghanzi and other centres, Ghanzi looks to Gobabis in South West Africa as its link with the outside world.

3. As a result of improvements brought about under the present programme, the latest classification for publicly maintained roads shews increased mileages in the higher standards, and is as follows:-

Main roads	1,195
Secondary roads	526
Improved tracks	343
Tracks	2,539
	4,603

These figures relate only to those roads maintained by Government and do not include large mileages of tracks which nevertheless are important for local communications. It will be seen that there is still an urgent need to raise the standard of the greater portion of maintained roads.

4. An important achievement under D.2632 was the provision of road staff which subsequently became permanent and today makes up the major portion of the Road Branch. The permanent staff as provided in the 1960/1961 estimates is considered sufficient to carry out the permanent maintenance commitment of the Department, and also to control the amount of new construction and improvement envisaged under this new scheme, provided that:-

(a) additional transport, plant and permanent camp accommodation is provided to bring the maintenance sections to a satisfactory standard; and

(b) major works, particularly bridges, are handled by consultants and/or contractors.

Where capital works are carried out departmentally casual labour has to be employed, but it is not possible to estimate the requirements in advance and it is convenient to treat the cost of

5. The capital expenditure has been broken down into items which indicate specific projects and equipment of a permanent nature. The breakdown into specific projects as far as possible follows accepted practice, and is the most satisfactory arrangement to answer the questions on expenditure on particular bridges and road sections. It is intended that consultant's fees and all working costs such as casual labour, materials, fuels and lubricants, repairs and consumable stores shall be charged to individual projects, in order that rational figures of project costs can be given. This will be an improvement on the form of the present scheme D.2632.

(b) Relation of the Proposed Scheme to the Territory's Development Programme.

6. With limited railway facilities the development of road communications is essential to the general economic development of the Territory. It is also desirable that the isolated western areas of Ngamiland and Ghanzi be drawn closer to the eastern areas, and an essential to accomplish this is good east-west road links. The scheme put forward is an integral part of the Development Plan for the Territory for 1960/1964 and provision has been made from the territorial allocation of C.D.W. funds to cover allocation to this scheme.

(c) Reasons for calling on Colonial Development and Welfare Funds.

7. The economy of the Protectorate does not make it possible at present to provide the necessary funds.

(d) Basis of division of cost between local funds and the Colonial Development and Welfare vote.

8. Not applicable, as a grant for the full amount is requested.

(e) Third Parties.

9. Not applicable.

(f) Availability of staff, materials and labour.

10. The staff is provided on annual estimates and material and labour should be readily available.

(g) Capital Works.

11. Most of the work will be carried out departmentally using direct labour. It is anticipated that consultants and/or contractors may be required for capital works like major bridges, following the usual accepted practice. Wherever possible open competitive tenders will be called, based on a priced bill of quantities. However, there may be works of a specialised nature, such as piled foundations, where it would be advisable to restrict tenders to contractors who are believed to be competent to undertake the work. This has advantages, and fortunately this territory is favourably placed to call in such contractors from adjacent territories to provide competitive tenders.

(h) Professional Advice.

12. The scheme is based on departmental professional advice.

APPENDIX I.

DEVELOPMENT OF ROADS AND BRIDGES.

FINANCIAL SUMMARY.

1. Administering Authority	Bechuanaland Protectorate Government		
2. Allocation	Territorial		
3. Classification	Public Works		
4. Description of Scheme	Development of Roads and Bridges within the Protectorate.		
5. Total Cost (in sterling)	£191,000		
6. Colonial Development and Welfare assistance required	Grant of £151,000		
7. Basis of administration for accounting purposes			
Capital		£	£ 151,000
Recurrent		Nil	
Total Cost			£ 151,000
8. Basis of calculation of grant required			
100% of Capital Expenditure		£	£ 151,000
Recurrent		Nil	
Total Grant			£151,000
9. Any other accounting instructions	None.		

APPENDIX II.

DEVELOPMENT OF ROADS AND BRIDGES

DETAILED ESTIMATES

Item No.	Details of Expenditure	1960/ 1961	1961/ 1962	1962/ 1963	Total 1960/ 1963	1963/ 1964	Total
		£	£	£	£	£	£
	CAPITAL.						
1.	Road Construction	16,000	18,000	18,300	52,300	15,000	67,300
2.	Bridge Construction	20,000	19,000	12,000	51,000	20,000	71,000
3.	Vehicles, Plant and Accessories	27,700	7,300	4,600	39,600	2,900	42,500
4.	Permanent Road Camps	1,400	2,000	2,000	5,400	1,500	6,900
5.	Hand Tools and Minor Equipment	300	300	300	900	200	1,100
6.	Camping Equipment	300	300	300	900	200	1,100
7.	Survey and Office Equipment	300	300	300	900	200	1,100
	TOTAL CAPITAL EXPENDITURE	£66,000	47,200	37,800	151,000	40,000	191,000

APPENDIX III

DEVELOPMENT OF ROADS AND BRIDGES.

NOTES ON ITEMS

Item 1 : Road Construction, 1960/1963 : £52,300

This is to cover the works costs of specific road improvement projects. The programme of road construction is subject to continuous amendment as demands for improvement arise and priorities change. It also presupposes certain funds being made available as a result of the report by the Economic Survey Mission - if these funds are not provided, or are only partially provided, then the programme will require drastic revision. The original programme for 1960/1963 was as set out below but lack of funds has reduced the provision to £52,300 and certain items will have to be held over.

(a) Main north-south road	15,000
(b) Francistown-Maun road	10,000
(c) Lobatsi-Ghanzi road	10,000
(d) Maun-Ghanzi road	5,000
(e) Crown Lands road	5,000
(f) Tribal District roads	5,000
(g) Farming District roads	5,000
(h) Block Allocation	12,300
	£67,300

The block allocation is to meet unforeseen additional demands, and may include items not indicated above.

Item 2 : Bridge Construction, 1960/1963 : £51,000

In this programme the word bridge includes causeways and culverts greater than 2 feet in diameter. A programme of bridge requirements and priorities was drawn up under D.2632, and the first call on new funds will be for the completion of items under construction on 1st April, 1960, the most important being the Peleng bridge at Lobatsi. The construction of a bridge over the Tati river at Francistown has been included. Although this work was the subject of a previous application for a Colonial Development and Welfare Fund allocation construction has been delayed pending the conclusion of a suitable agreement with the Tati Company, who have now promised a contribution to the cost, and the opportunity has been taken to include this project as part of this application. Another priority is the construction of a new bridge at Matlapaneng to serve Maun and Ngamiland. The present wooden structure is very shaky, requires constant heavy repair, and will not withstand any flood. Its failure would be serious. The programme set out is tentative, as it is not possible to give reasonably accurate estimates of bridges before site investigations and designs have been completed. The provisional programme is set out below, but, as with roads, funds are insufficient and only £51,000 can be provided. Certain items must therefore be carried over.

/(a) Completion

(a) Completion of items carried over	5,000
(b) Ramoutsa Station bridge	5,000
(c) Matlapaneng bridge - Maun	10,000
(d) Pilane/Mochudi causeway	1,000
(e) Tati bridge - Francistown	20,000
(f) Toteng bridge	3,000
(g) Mahalapye main road bridge	15,000
(h) Small bridges not specified	6,000
	£ 65,000

Item 3 : Vehicles, Plant and Accessories, 1960/1963 : £39,600

As explained in the application summary, the development programme can only be carried out by the permanent staff if additional transport and plant can be provided. The probable requirements are set out below.

4 Trucks	5,500
5 Vans	4,800
11 Tractors	8,800
12 Trailers	3,600
12 Drop wagons	6,000
12 Water carriers/Sprinklers	6,900
3 Rubber tyred rollers	2,400
3 Caravans	600
Minor items not specified	1,000
	£ 39,600

Item 4 : Permanent Road Camps,, 1960/1963 : £5,400

Road construction and maintenance is an arduous task and the living conditions of field staff and labour leave much to be desired. With the development that has taken place the time has come to improve these conditions by the establishment of more permanent road camps. It is intended to provide permanent stores, offices and security fencing, and it is hoped to provide permanent accommodation from the Housing loan. These improvements should attract a better class of recruit from the local inhabitants, a class that can be trained to take over more responsible work on road maintenance. A twenty five mile stretch of main road could be supervised by a Road Overseer based on a permanent camp, and a road foreman could then be expected to supervise a section larger than as at present. The present scheme would provide about 6 camps only, but this would be a move in the right direction.

Item 5 : Hand Tools and Minor Equipment, 1960/1963 : £900

For the purchase of hand tools and minor equipment such as picks, spades and shovels so essential to road work.

Item 6 : Camping Equipment, 1960/1963 : £900

Camping facilities are essential on road work, and this item is for the purchase of camp accommodation and equipment.

Item 7 : Survey and Office Equipment, 1960/1963 : £900

This will provide for survey and office equipment and material in addition to that already provided, and which is certain to be found necessary as the work proceeds.

ANNEXURE VIII.

APPLICATION FOR COLONIAL DEVELOPMENT AND WELFARE GRANT FOR TSETSE CONTROL WORK.

(a) General description of the scheme.

The present application is in continuation of Schemes D.681 and D.681 A to D. The control measures to be adopted during 1960/1963 are based on the recommendation of Dr. Lewis, of the World Health Organisation, who visited the tsetse areas of the Territory during 1959 (a copy of his recommendations is attached as Appendix IV), and the estimates have been framed accordingly.

(b) Relation of the scheme to the Territory's Development Plan.

2. The scheme is included in the 1960/1964 Development Plan, and provisional allocation of funds has been made from the territorial allocation of C.D.W. funds for the period.

(c) Reasons for calling upon Colonial Development and Welfare Funds.

3. Local funds cannot meet the full cost of the scheme.

(d) Basis of division of cost between local funds and the Colonial Development and Welfare vote.

4. C.D.W. funds to meet 100% of all capital expenditure; 25% of recurrent expenditure in 1960/1961 and nil thereafter.

(e) Assistance to Third Parties.

5. Not applicable.

(f) Availability of staff, materials and labour.

6. Staff and labour are available locally, materials can readily be obtained.

(g) Capital Works.

7. Not applicable.

(h) Professional Advice.

8. The scheme is based on the advice of Dr. Lewis of the World Health Organisation.

APPENDIX I.

TSETSE FLY CONTROL

FINANCIAL SUMMARY

1. Administering Authority	Bechuanaland Protectorate Government.
2. Allocation	Territorial.
3. Classification	Tsetse Fly Control.
4. Description of Scheme	Control of Tsetse Fly.
5. Total Cost	£322,468.
6. Colonial Development and Welfare Assistance required	£30,807.

7. Basis of Administration for Accounting Purposes

	£
Capital	12,751
Recurrent	222,881
	£235,632

8. Basis of calculation of Colonial Development and Welfare Grant requested

	£	£
Capital 100%	12,751	
Recurrent 1960/1961 25%	18,056	
		30,807

9. Other Accounting Instructions — Nil.

APPENDIX II.

TSETSE FLY CONTROL

DETAILED ESTIMATES.

Item No.	Details of Expenditure	1960/1961	1961/1962	1962/1963	Total 1960/1963	1963/1964	Total
		£	£	£	£	£	£
	CAPITAL.						
1.	Motor Vehicles	4,800	820	-	5,620	1,700	7,350
2.	Boat and Engine	200	-	-	200	-	200
3.	De-Flying Chamber (Chobe)	900	-	-	900	-	900
4.	Mechanical Saws	400	200	200	800	200	1,000
5.	Mobile Workshop Equipment	20	20	20	60	20	80
6.	Camping Equipment	351	98	263	712	98	810
7.	Technical Equipment	850	150	150	1,150	350	1,500
8.	Office Furniture and Equipment	300	-	50	350	-	350
9.	Tools	660	660	660	1,980	660	2,640
10.	Arms	623	123	123	869	123	992
11.	Animals, Bait and Braught	110	-	-	110	-	110
	TOTAL CAPITAL EXPENDITURE	£9,214	2,071	1,466	12,751	3,151	15,902
	RECURRENT.						
	PERSONAL EMOLUMENTS.						
	Divisions I & II.						
12.	1 Tsetse Fly Control Officer, £666x30-816x36-1032x42-1242x48-1386	1,030	1,071	1,113	3,214	1,155	4,369
13.	1 Entomologist, £666x30-816x36-1032x42-1242x48-1386	500	689	719	1,908	749	2,657
14.	1 Administrative Assistant, £726x30-816x36-1032	545	749	779	2,073	809	2,882
15.	2 Field Officers, £576x30-816x36-888	1,776	1,776	1,776	5,328	1,776	7,104
16.	1 Survey Officer, £576x30-816x36-888	606	636	666	1,908	696	2,604
17.	1 Mechanic, £576x30-786	744	756	786	2,286	786	3,072
18.	Inducement Pay	1,730	1,891	1,945	5,566	1,989	7,555
19.	Education Allowance	672	672	672	2,016	792	2,808
20.	Ngamiland Allowance	387	396	396	1,179	432	1,611
21.	Bechuanaland Protectorate Allowance	323	330	330	983	360	1,343
22.	Gratuities	-	-	-	-	3,035	3,035
	Carried forward	8,313	8,966	9,182	26,461	12,579	39,040

Item No.	Details of Expenditure	1960/1961	1961/1962	1962/1963	Total 1960/1963	1963/1964	Total
		£	£	£	£	£	£
	Brought Forward	8,313	8,966	9,182	26,461	12,579	39,040
	Division III.						
23.	1 Clerk, Grade I	186	204	222	612	240	852
24.	1 Storekeeper, Grade III	132	150	168	450	186	636
25.	3 Storekeepers, Grade IV	252	288	324	864	360	1,224
26.	1 Messenger, Grade IV	84	96	108	288	120	408
27.	2 Laboratory Assistants, Grade I	264	300	336	900	372	1,272
28.	3 Survey Assistants, Grade I	632	678	724	2,034	785	2,819
29.	5 Head Fly Boys, Grade III	634	726	780	2,140	852	2,992
30.	11 Fly Boys, Grade IV	1,192	1,275	1,358	3,825	1,440	5,265
31.	4 Head Labourers, Grade II	553	612	684	1,854	744	2,598
32.	1 Mechanic, Grade III	132	150	168	450	186	636
33.	2 Saw Labourers, Grade IV	246	258	270	774	282	1,056
34.	11 Motor Vehicle Drivers, Grade II	1,812	2,020	2,192	6,024	2,355	8,379
35.	4 Motor Vehicle Labourers, Grade IV	637	673	710	2,020	740	2,760
36.	Casual Labour	32,710	32,341	30,699	95,750	30,999	126,749
37.	Ngamiland Allowance	403	404	404	1,211	439	1,650
38.	Gratuities	-	-	-	-	2,604	2,604
		48,187	49,141	48,329	145,657	55,283	200,940
	GENERAL						
39.	Temporary Assistance	1,250	1,250	1,250	3,750	1,250	5,000
	TOTAL PERSONAL EMOLUMENTS	£49,437	50,391	49,579	149,407	56,533	205,940
	OTHER CHARGES						
40.	Travelling Expenses	1,250	1,350	1,350	3,950	1,350	5,300
41.	Rations	5,724	5,688	5,353	16,765	5,353	22,118
42.	Maintenance and Running of Mechanical Equipment and Motor Vehicles	7,978	9,888	9,888	27,754	9,943	37,697
43.	Maps, Photographs, etc.	50	50	50	150	50	200
44.	Stationery and Office Requisites	220	220	220	660	220	880
45.	Railage and Freight	2,700	2,700	2,700	8,100	2,700	10,800
46.	General Stores	2,750	2,750	2,250	7,750	2,250	10,000
47.	Incidental Expenses	25	25	25	75	25	100
	Carried forward	£ 20,697	22,671	21,836	65,204	21,891	87,095

Item No.	Details of Expenditure	1960/1961	1961/1962	1962/1963	Total 1960/1963	1963/1964	Total
		£	£	£	£	£	£
	Brought forward	20,697	22,671	21,836	65,204	21,891	87,095
48.	Reference Books and Journals	40	40	40	120	40	160
49.	Passages	-	-	-	-	1,171	1,171
50.	Experimental Requirements	50	50	50	150	50	200
51.	Insecticides	2,000	3,000	3,000	8,000	4,000	12,000
	TOTAL OTHER CHARGES	22,787	25,761	24,981	73,474	27,152	100,626
	TOTAL RECURRENT EXPENDITURE	72,224	76,152	74,505	222,881	83,685	306,566
	TOTAL CAPITAL AND RECURRENT EXPENDITURE	81,438	78,223	75,971	235,632	86,836	322,468
	Less Bechuanaland Protectorate Government Contribution (75% in 1960/1961 and 100% thereafter)	54,168	76,152	74,505	204,826	83,685	288,512
		£27,270	2,071	1,466	30,807	3,151	33,956

APPENDIX III.

CONTROL OF TSETSE FLY

NOTES ON ESTIMATES

Item 1:

1960/1961.

1 x 5-ton diesel replacing 3-ton petrol on Maun "front" (to be held as spare if still serviceable)	£1,200
1 x 1½-ton diesel for Entomologist	850
1 x 1½-ton diesel for Survey Officer (to replace "Land Rover", which will be boarded).	850
1 - four-wheel drive vehicle for insecticide campaign	950
1 - four-wheel drive vehicle for General Survey work	950
	£4,800

1961/1962

1 x 1½-ton diesel for use by temporary assistants (Item 39) (replacing 1½-ton petrol, which will be boarded).	820
	£5,620

Item 2:

Boat and engine for use in the Shorobe area for work in terrain inaccessible to motor vehicles.

Item 3:

One De-Flying Chamber for the Chobe. Provision for fitting sliding doors to three existing Chambers.

Item 4:

Four mechanical saws in the first year and two replacements yearly thereafter. This will enable three saws to be employed simultaneously.

Item 5:

Hand and small power tools for Mobile Workshop.

Item 6:

1960/1961

New tentage for Entomologist and Survey Officer	200
Camp Equipment for Entomologist	40
Tarpaulins for labour force	111
	£351

Balance for replacements tentage, tarpaulins and camp equipment.

Item 7:

1960/1961

Binocular microscope	£ 180
Mapping Equipment	50
Insecticidal equipment (Motor driven)	120
Knapsack insecticide sprayers (20)	500
	£ 850

1961/1962

Mapping equipment	£50
Sprayers (4 replacements)	100
	£150

1962/1963

Mapping equipment	£50
Sprayers (4 replacements)	100
	£150

Item 8:

Safe (new) - Head Quarters	
Long-carriage typewriter (new)-H.Q.	£110
Filing cabinet (replacement) - H.Q.	80
Filing cabinet (new) - Field station Maun "front"	45
Office Chairs (new) - 1 Field station) Maun "front"	35
Contingencies - 1 Entomologist)	20
	10
	£300

Plus £50 for replacements in third year.

Item 9:

£600 a year for axes and hatchets.
£ 60 a year for picks, shovels, etc.

Item 10:

1960/61

10 rifles .303 (replacements)	£123
30 shotguns (night hunting: Maun "front")	500
	£623

Replacements for following years at £123 a year.

Item 11:

£110 in the first year to provide tollies as bait animals for fly, and donkeys for transport of water, etc. in areas particularly suited to their use.

Items 12 - 17:

Salaries on the scales approved in Scheme D.681C. Starting salaries of £660 and £800 per annum have been provided for under Item 12 and 15 for an Entomologist and an Administrative Assistant respectively. These two new posts were recommended by Dr. E. A. Lewis and by the Central Policy Committee held at Francistown on 12th October, 1959. Provision for nine months during 1960/1961 has been made for these two posts.

Item 18:

Inducement pay in accordance with paragraph 49 of the Surridge Report.

Item 19:

Education allowance for seven children over four years, and for an eighth child during the last year.

Items 20 and 21:

Allowance at regulation rates.

Item 22:

Applies to 1963/1964 only.

Items 23 and 24:

Salaries as in Scheme D.681C.

Item 25:

One additional Storekeeper is proposed to assist with the increased amount of stores work at the Maun headquarters. The second proposed new Storekeeper would be employed at the Nokaneng Field Station.

Item 26:

Salary as in Scheme D.681C.

Item 27:

New posts for two Laboratory Assistants, one to aid the Entomologist on field investigations and the other to be employed on routine laboratory procedure at the Maun headquarters.

Item 28:

An additional Survey Assistant is required for duties in the Chobe and Shorobe areas.

Item 29:

Additional Grade III Fly Boys are proposed for investigation supervisory duties with the Survey Officer, and in the Chobe and Shorobe areas.

Item 30:

Salaries as in Scheme D.681C.

Item 31:

An additional Head Labourer is proposed for duty in the Chobe area.

Items 32 and 33:

Salary as in Scheme D.681C.

Item 34:

Five additional Motor Vehicle Drivers are required for the enlarged vehicle strength.

/Item 35:

Item 35:

Salaries - for an establishment reduced from 7 to 4 - as in Scheme D.681C. The posts have been re-designated Grade IV, in accordance with paragraph 128 of the Surridge Report. Policy will be to provide only heavy load-carrying vehicles with graded Motor Vehicle Labourers. Routine care and maintenance of smaller vehicles will be carried out by drivers.

Item 36:

It is proposed to allocate the Casual Labour force as follows:-

Western operational area:

Tsau/Setateng/Makakun : 250 clearing men for 8 months of each year.
Gomare : 250 clearing men for 8 months of each year.
Nokaneng/Mayaneng : 100 clearing men for 8 months of each year.
Plus 20 hunters
25 labourers for fences, roads, bridges and building.

Maun "front":

120 clearing men for 8 months of each year.
75 hunters for the first two years, reducing to 30 hunters for 1962/1963.
40 labourers for fences, roads, bridges and buildings.
20 hunters for night shooting.

Shorobe:

5 labourers for buildings for one year.
27 labourers for saw operations.

Chobe:

50 labourers.

Insecticide operations:

10 operators for the first year.
15 operators for the second and third years.
Plus 20 labourers for 8 months of each year.

De-Flying Chambers:

9 men.

Miscellaneous:

6 motor vehicle drivers.
3 motor vehicle labourers.
33 foremen and one marker for 8 months of each year.
1 saw records clerk.
11 picquet fly boys.
29 other fly boys (including 11 to replace Grade V Fly Boys authorised in Scheme D.681C but now being cut).

/Wages

Wages have been calculated thus:-

	Motor Vehicle drivers	at 3/4d.	per diem
	Motor Vehicle labourers	2/4d.	
	Fly boys	1/8d.	
	Picquet fly boys	2/4d.	
1	de-flying chamber supervisor	6/8d.	
7	de-flying chamber staff	3/4d.	
21	de-flying chamber staff	1/8d.	
4	Assistant saw labourers	2/4d.	
1	Foreman	6/8d.	
7	Foremen	5/0d.	
25	Foremen and/or markers	3/4d.	
	Saw records clerk	5/0d.	
	Insecticide operators	3/4d.	
	Hunters	2/0d.	
	Insecticide labourers	1/10d.	
	Fence men	1/10d.	
	Builders	1/8d.	
	Clearing labourers	1/10d.	
	" " Chobe (current rates payable there: no rations).	3/0d.	

Item 37:

Allowances at regulation rates.

Item 38:

Applies to 1963/1964 only.

Item 39:

1960/1961 and 1961/1962

1 temporary labour supervisor for 8 months at Gonare during clearing operational period	£400
1 temporary labour supervisor for 8 months at Tsau during clearing operational period	400
Contingencies	50
	£ 850

Former Item 37, Cost of Living Allowance, deleted in terms of Surridge Report, paragraph 32.

Item 40:

To cover costs of free tickets to coast, payment of travelling and subsistence allowances, and expenses of visiting experts.

Item 41:

The ration for each labourer is 60 lbs. maize and 1 lb. salt per month. Previous experience indicates that the price of maize whether obtained from within Ngamiland or imported from elsewhere is unlikely to fall much below £2 per bag, and it is on this figure that the present estimate is based.

Detailed calculations are as follows:-

/Year

Year	1	2	3
	£	£	£
West:			
Labourers:-			
Tsau/Setaten/Makakun	1,200	1,200	1,200
Gonare	1,200	1,200	1,200
Nokaneng/Mayaneng	480	480	480
Hunters	144	144	144
Fences, etc.	180	180	180
Maun:			
Labourers	576	576	576
Hunters	540	540	216
Fences, etc.	288	288	288
Hunters (night)	144	144	144
Shorobe:			
Buildings	36	-	-
Insecticide	96	96	96
Miscellaneous:			
De-Flying Chamber	152	152	152
Lorry boys	22	22	22
Picquets	80	80	80
Other Fly boys	426	426	426
Salt	160	160	149
	5,724	5,688	5,353

Former Item 38, Entertainment Allowance, deleted in terms of Surridge Report, paragraph 201.

Item 42:

Provision for maintenance and running of motor vehicles, power saws, insecticide sprayers and power boat engine. Theoretical average annual costs are calculated as follows:-

West:

	£
1 x 5-ton diesel at 3,600 miles x 3/6d.	630
1 x 2-ton petrol at 2,400 miles x 3/0d. (Tsaw-water)	360
1 x 1½ton petrol at 2,400 miles x 2/6d. (Water 1961/1962 onwards)	300
1 x 1½ton diesel at 12,000 miles x 2/3d. (Field Officer)	1,350

Maun/Shorobe:

1 x 5-ton diesel at 1,800 miles x 3/6d. 1 x 158, 3 x (presumed to be available only during latter half of first year and estimate reduced accordingly).	315
1 x 3-ton diesel at 3,600 miles x 3/6d. (Mechanic)	630
1 x 3-ton petrol at 1,800 miles x 3/0d. for first half of first year only 1 x	135
1 x 3-ton petrol at 2,500 miles x 3/0d. for remainder of scheme (water) 4 x (estimate for first year reduced accordingly).	375
1 Land Rover at 1,200 miles x 1/9d. (This vehicle could temporarily replace another 4-wheel drive vehicle for insecticide or survey work, and would otherwise be used at Headquarters).	105
1 x 1½-ton petrol at 4,800 miles x 2/6d. (Field Assistants) 1 x first year only: for replacement by:-	600
1 x 1½-ton diesel at 4,800 miles x 2/3d. (Field Assistants) 1961 - 1962 onwards.	540
1 x 1½-ton diesel at 6,000 miles x 2/3d. (Field Officer)	675

	£
Chobe:	
1 x 3-ton diesel at 1,300 miles x 2/6d. (running costs to be shared with Agricultural Department)	163
Insecticides and Surveys:	
2 small 4-wheel drive vehicles at 4,800 miles x 1/9d. 1 x 420, 3 x	840
(presumed to be available only during latter half of first year, and estimate reduced accordingly).	
1 x ½-ton diesel at 9,600 miles x 2/3d. (T.F.C.O.) (half mileage only during first year as this officer will be on overseas leave). 1 x 540, 3 x	1,080
2 x 1½-ton diesel at 7,500 miles x 2/3d. Entomologist and Survey Officer. Half mileage only for Entomologist during first year). 1 x 1,266, 3 x	1,688
3 power saws at £250	750
Insecticide sprayers 1 x 136, 2 x 27, 1 x 82	
Boat	66

Yearly expenditure is thus as follows:-

Year 1	2	3	Total
£7,978	9,888	9,888	27,754

Items 43 and 44:

Essential survey materials, estimate based on previous expenditure; and slight increase in office requisites because of proposed additional staff.

Item 45:

The estimate provides for transport of increased quantities of petrol, diesoline, oil and lubricants and maize.

Item 46:

Includes provision for increased quantities of ammunition, particularly during the first two years, the period of intensified game destruction on the Maun "front".

Item 47:

Estimates based on past requirements.

Item 48:

Estimate increased to provide for additional journals and textbooks.

Item 49:

Applies to 1963/1964 only.

Item 50:

Provides for requirements arising from adoption of new control measures.

Item 51:

Provides for supply of insecticide to Shorobe and other areas where its use may be deemed expedient.

NOTE OF MEETING AT MATEKING ON THURSDAY 23rd JULY, 1959.

Present - Government Secretary
Dr. E. A. Lewis
Director of Medical Services
Director of Agriculture
Tsetse Fly Control Officer
First Assistant Secretary (Finance)
Assistant Secretary (Development)

TSETSE FLY CONTROL

Dr. Lewis gave a general review of his impressions after an intensive examination in the field, lasting five weeks, during which he visited all the affected areas.

2. The outstanding features of the situation were summarised by Dr. Lewis as follows:

(i) the advance of the fly, of which there had been indications previously, was now definitely established, and the areas of advance were known. The work done had been of particular importance in assessing the extent of the advance and the means of arresting it. In all areas except Maun there had been an advance; at Maun the position had been held, and improved slightly, despite the massing of the fly. There was a slight but definite threat in the Chobe.

(ii) the construction of deflying chambers and pickets to control the advance. The chambers had been particularly valuable in protecting Maun which would otherwise have been in serious danger.

(iii) Mr. Pilson's work and maps had been very useful to Mr. Lewis. Much valuable work had been done, but fly surveys to determine actual and potential habitats should be continued and intensified on the Western Front and fly patrols continued. Mr. Pilson's work was accurate but did not completely cover the possible habitats. It was not true, as was sometimes asserted, that only 3% of bush need be cleared to remove all tsetse habitats.

(iv) Practical reclamation. The Maun front was well in hand. Work on the Western front had started rather late but not too late. The main centres of population had been protected and stock grazing areas were now being protected;

(v) the change in the attitude of local Africans from indifference and complaint to active co-operation by money and labour;

(vi) the enthusiasm of the local Committee, and its good team work. Their recommendations might possibly be a little ambitious, but should be very carefully considered and implemented as far as possible;

(vii) very definite progress had been made. The time had now come to review the whole situation and try to benefit by the investigational work of the past by practical work; to change from defence to bold and aggressive attack.

3. Dr. Lewis said that sleeping sickness was not necessarily a big problem: it could be cured by the use of the correct drug both in early and late stages. People in the areas were now much less worried. But there were one or two disquieting points. Cases had been reported at Seronga. If the disease spread to the Chobe, Northern Rhodesia might become concerned. At Nokaneng and Tsau the disease remained in spite of fly reduction and its persistence might make people doubt the value of fly work. A dispensary was particularly required at Shorobe. It was very desirable that a proper survey should be made of the incidence of human trypanosomiasis. It was somewhat difficult to recognise as the normally typical gland swellings were absent in Ngamiland cases. For this and other reasons, a Medical Officer was required, not a trained Dispenser. The Director of Medical Services said that the dispenser could act as a rough screen with a Medical Officer in reserve. He would prefer if at all possible to use his own staff who knew the country and the language rather than rely on W.H.O. personnel - if he could fill the two vacancies on his establishment it would be possible to second an officer for the work. He could probably provide funds to do the work. It was agreed that the Director of Medical Services should examine the proposal in detail.

4. On the Veterinary side, Dr. Lewis said that a survey of the stock disease was as important as the fly surveys. Tsetse patrols had limitations, but the fly came readily to cattle and often the first indication of its presence was disease in stock. If reliable figures of the incidence of trypanosomaisis could be obtained the need for test herds could be decided. At present it was difficult to determine how far deaths were attributable to trypanosomaisis. The traders themselves treated cattle they bought or reared, African cattle were not protected. If it were proposed to move cattle to the suggested Western grazing area it would be essential to be certain that infection was not carried with the cattle. The Tsetse Fly Control Officer said that the local Veterinary staff were awaiting a decision on the scheme which had been put forward.

5. Dr. Lewis said that hunting parties could carry infection and if hunting were permitted in the Mababe area as he had heard, the points of entry and exit from fly areas should be carefully controlled. It was quite possible that if game shooting were allowed human trypanosomiasis might be carried up the Chobe to the Rhodesias. It was however a theoretical problem and he could not be dogmatic - the Tsetse Fly Control Officer would have to carry out surveys and consider the problem with the Director of Medical Services and with the Director of Veterinary Services in regard to the stock-route

from Ngamiland to the north. He did however want to emphasise the importance of full consideration of the problem by Government.

6. The introduction of people into cleared areas on a small scale was worth speeding up. Basic agricultural needs should be catered for first; stock could follow. It was necessary to determine by experimental resettlement what density of population was necessary to consolidate cleared areas in Ngamiland and the Chobe. The Director of Agriculture said that he proposed to start by small scale extension from the existing settled area. It was important that experimental work should be a step ahead of the resettlement so that suitable advice could be given. It was not necessary to have a qualified Agricultural Officer; what was required was someone who would get to know the people and secure their trust when the time came to move into the resettlement areas. He hoped to send an Agricultural and Livestock Officer to Maun who could train Africans. He would receive technical instructions from a qualified Agricultural Officer - e.g. the Agricultural Officer at Francistown.

7. Information. Dr. Lewis suggested that a small information sheet should be circulated to the Regent and Councillors to let them know of the proposed appointment of of an Agricultural and Livestock Officer and generally to keep them in the picture of what was being done and what was proposed. A similar sheet could be issued from time to time as necessary.

8. Chobe. Dr. Lewis enquired whether a similar Agricultural and Livestock Officer appointment would be made to the Chobe. The Director of Agriculture said that there was not enough work there to occupy an Agritural and Livestock Officer full time and it would be useless to have African staff without proper supervision. He was however apprehensive of the effect on possible forest concessions in the Chobe if human trypanosiamis should spread to the area.

9. Insecticides. Dr. Lewis said that the use of insecticides and game control were the quickest ways of stopping an advance of fly. It was however of paramount importance that the officer in charge should have proper training and some experience in the use of insecticides and of the appropriate equipment before this method of control was adopted. There was no point, except in an emergency, in merely killing large numbers of flies as the area would soon be re-infested. It was necessary to co-ordinate insecticides with other measures, and at this stage their use could only be justified if there was a full plan to follow up clearings with resettlement. The balance of nature was not affected by the use of insecticides.

10. Additional Professional Officer. Dr. Lewis said that the use of insecticides would certainly demand the recruitment of another qualified officer, apart from the desirability of this on other grounds. The Tsetse Fly Control Officer was already overburdened and there

was/...

was no reserve for leave or illness. An additional man could take charge of the Shorobe and Eastern areas and relieve the Tsetse Fly Control Officer of staff training and many other duties and allow him time for overall supervision and for such studies as analysis of fly rounds, leading to a survey of actual and potential habitats, fly foci, game control, etc. Provision should be made for the post in the first year of the 1960/65 programme and it should continue throughout that period. After discussion, it was agreed that while there was nothing to choose between a South African or a United Kingdom recruit the time of ending of the University years would make recruitment in the United Kingdom preferable. A degree in Zoology or Entomology was required. Training could be arranged en route to the Bechuanaland Protectorate mainly in East Africa, with subsequent visits to the Rhodesias before taking up duty. The contract should be a normal three-year one and emoluments would be as for Agricultural Officers. Dr. Lewis said that he would enquire whether the World Health Organisation could arrange the training.

11. Administrative Assistant. Dr. Lewis considered that an Administrative Assistant was urgently required to deal with routine correspondence, commitment control, stores and general office work. The work was at present done by a Field Officer whose time would be better spent on field work. The duties of such an officer could not be performed adequately by an African Clerk.

12. Central Policy Committee Meetings. Dr. Lewis suggested that these should be held twice yearly and that copies of the minutes should be sent to the World Health Organisation at Brazzaville and to himself.

13. Clearing. Dr. Lewis explained that clearing could be either "selective" or "discriminative". Selective clearing involved clearing one species only, discriminative clearing a group of allied species which were of importance as possible habitats. In selective clearing the danger of overlooking old trees was great, and "mopping up" often became necessary. Some top canopy trees were quite unsuitable as tsetse habitats and could safely be left: elsewhere it might be necessary to clear most of the bush where it was composed largely of allied species. The action required could not be defined in mathamatical terms - it might often be better to clear rather more than appeared necessary than to have to return to the area to re-clear. He thought that possibly too much emphasis was placed on the purely vegetational side when the real information required was on tsetse habitats. The Tsetse Fly Control Officer had acquired a lot of information which would be valuable when properly studied.

14. The Director of Medical Services enquired whether the survey of human trypanosomiasis was of immediate urgency. Dr. Lewis said that it should be done within the five year period - the earlier the better. The survey should cover the populated areas of Ngamiland first and should include tracing of possible healthy carriers. Large expenditure would not however be justified. It was agreed that the Director of

Medical/...

Medical Services should arrange in consultation with the Medical Officer Maun.

15. There was some discussion of late burning of grass in the Chobe forest areas where there was a conflict between the desirability of late burning for tsetse control and early burning to avoid danger to trees from fires. It was agreed that a compromise would have to be accepted and that burning should be delayed as much as possible without constituting a serious fire hazard.

Recommendations.

16. Dr. Lewis said that for the present he withdrew his recommendation that the outer fence on the Maun front should be brought up to 8-strand, pending assessment of the value of game control. Any repair work should however allow for an eventual 8-strand fence. His detailed recommendations were :

(i) Periodical reconnaisance fly surveys should be continued and extended to determine the limits of areas actually infested and the tendencies to expand or disperse. This should be completed during 1960.

(ii) Regular fly patrols should be increased to locate more precisely the high fly density areas and the seasonal fluctuations in fly numbers. The vegetation and the effects of anti-tsetse measures could then be studied.

(iii) The nature and relative importance of fly habitats should be studied to effect discriminative bush clearing more effectively and more economically and to differentiate between infested and potential habitats.

(iv) Game Control should be re-organised and intensified, within the fenced area of the Maun front in particular, so as to expedite this aspect of fly control. The strengthening of the outer fence could be postponed in the meantime.

(v) Naragha Valley. Discriminative clearing of the three lines of advance should be completed and, in the Morope and Xudum areas lines of advance should be broken by extending clearings outwards beyond the outer fence. Ringbarking of trees should be adopted within habitats if the additional intensified game control was not immediately effective.

(vi) Moshu/Boro area. The residual fly foci should be dealt with as necessary by discriminative clearing.

(vii)/...

(vii) Gwekwa area. It should be ascertained whether there was any trypanosomiasis in cattle in the area. It could then be determined whether to leave the area free or to introduce a test herd.

(viii) Shorobe. Discriminative clearing should be undertaken in the block Round 13 where the fly density is 5.8 (approx.) and leaving the block Round 14 (which is near the road north of Shorobe township) for treatment with deldrin insecticide. (The tribe were concerned about this area). The other blocks in the district would be left for large scale application of the insecticide, which should preferably follow clearings to isolate those blocks. Those blocks would then, if insecticidal work is successful, provide additional safeguards.

(ix) Makukun Area. Clearing of potential habitats should be continued as a dispersal measure in Makukun area, so as to check fly advance south to Lake Ngami and to clear known fly foci between Makukukun, Setateng and Tsau.

(x) Tsau. Discriminative clearing should be completed and extended eastwards across the Taoghe river. This is an important area for the immediate future as it would provide additional grazing northwards from the lake and link with the Gwekwe work, apart from providing an additional safeguard for Tsau.

(xi) Gomare. The present clearings should be completed and continued eastwards to Tubu Island, which although reported to have been evacuated, was still inhabited.

(xii) Kadizwalo. A close watch should be kept on this isolated habitat. It was ublikely to prove a big task to eradicate it but quick action might be required if there was any tendency for the fly to expand.

(xiii) Area South of Gomare. Consideration should be given to the action necessary to deal with proved foci south of Gomare. Present clearings should be reinforced by continuing southwards with ring-barking.

(xiv) Chobe. Fly patrols and surveys should be continued and the advance of fly northwards from Kavimba should if possible be checked by ring-barking, late control fires and settlement.

(xv) Game Hunting. If it was contemplated opening up the Mababe for game hunting, consideration should be given to the effect of increased traffic on the fly situation in that area, and to the desirability of adopting some method of deflying after making initial surveys of the fly perimeter in this sector.

APPLICATION FOR COLONIAL DEVELOPMENT AND WELFARE FUNDS FOR THE EXTENSION OF THE PRESENT DISEASE CONTROL FENCING AND QUARANTINES.

(a) General description and objects of the scheme and the advantages to be derived from it and a detailed explanation for the proposals for achieving the desired results.

The scheme provides for additional disease control fencing, some 460 miles in length, with one additional quarantine camp and for the necessary transport, plant and personnel for the clearing of the fence lines and erection of the fences, for the employment of a further three European Fence Foremen and a total increase of 28 African staff to maintain these fences and quarantines.

2. The additional fencing and quarantine accommodation is intended to prevent uninterrupted movement of cattle and therefore the passage of highly contagious diseases from the enzootic areas and areas contiguous to the enzootic area, to the remainder of the country, particularly to the highly populated areas of the Eastern Protectorate.

3. Since 1933 there have been nine outbreaks of foot and mouth disease in the Protectorate, the places affected and the origin of the disease being outlined below.

Date	Places affected in Territory	Origin.
1933	Tati, Eastern Protectorate, Ramathlabama, Pitsani, Molopo	From Southern Rhodesia to the Tati, thence by movement of infected cattle en route to Union markets which were staged at Ramathlabama.
1934	Ngamiland, Rakops, Chobe	Ngamiland.
1937	Palapye	Rakops (probably carried over from previous outbreaks).
1944-1945	Ngamiland	Area north of Lake Ngami.
1947	Ngamiland, Rakops	Ngamiland.
1948	Serowe and Eastern Protectorate	Ngamiland.
1950	Francistown	Probably re-occurrence of 1948 outbreak.
1957-1958	Kukong, Kang, Molopo and Southern Protectorate	Unknown.
1958	Ngamiland	Ngamiland.

4. It will be seen from the above that, with the exception of the 1933 outbreak, which clearly originated in Southern Rhodesia, and the 1957 outbreak in the Southern Protectorate, the origin of which is not known, the remaining seven outbreaks either occurred in Ngamiland or under circumstances which suggest that Ngamiland was the original source.

5. In view of the above, control measures have been directed towards limiting the extension of possible outbreaks of diseases from Ngamiland to the remainder of the territory by hindering the movement of cattle from Ngamiland to other parts of the Territory and to the line of rail by the erection of cordon fences and quarantine camps at

which cattle are held in quarantine for fourteen days.

6. As a result of recommendations made at a meeting of the Inter-territorial Committee on Foot and Mouth Disease, held in Bulawayo in 1950, a certain amount of disease control fencing and the erection of quarantine camps was carried out in the Protectorate. The fences and quarantine camps are as follows:-

The Makalamabedi fence and quarantine camp which cuts off Ngamiland from the Bamangwato Reserve in the east; the Central Bamangwato fence supported by quarantine camps at Dukwe in the north and Makoba in the south runs along the eastern boundary of the Makarikari Salt Pan almost to the Federation border; the Debeeti fence and quarantine camps which run along the boundary between the Bamangwato Reserve and the Bakgatla and Bakwena Reserves and which divide the Northern from the Southern Protectorate to the eastern part of the territory; a quarantine camp only at Kuki, near the border between Ngamiland and Ghanzi (this quarantine camp has recently been supported by a cordon fence 90 miles in length).

7. Cattle moving east from Ngamiland are quarantined at Makalamabedi and subsequently at Dukwe and Makoba, depending on the route followed. Cattle moving south from Ngamiland to Ghanzi are quarantined at Kuki and can then move south, uninterrupted by fences or quarantine camps, until such time as they reach the Molopo and the remainder of the Southern Protectorate. In so far as the possible spread of disease from Ngamiland is concerned, the route via Kuki provides a back door around our present disease fences and, although this danger has been mitigated by the erection of 90 miles of disease control fencing, it is nevertheless necessary to complete the fencing of the southern boundary of Ngamiland to the South West African border on the one hand and the Makalamabedi fence on the other. The completion of this fence is therefore a priority.

8. During recent years considerable trouble has been experienced in Angola from foot and mouth disease. From information received it would appear that the authorities there pay little heed to the disease since they do not export cattle. The position has deteriorated considerably in recent months due to the introduction into Angola of European type foot and mouth disease, and the situation has become complicated by the existence, in close proximity to the Bechuanaland border, of strains of virus immunologically distinct from the South African type so far encountered. Uninterrupted movement of cattle takes place between Angola and the Caprivi Strip and it is suspected that equally uninterrupted and illegal movement of cattle occurs from the Caprivi Strip to Ngamiland. It would be unfortunate indeed if European type foot and mouth disease were to enter Ngamiland from Angola or from the Caprivi Strip through lack of forethought and neglect of obvious precautions. For this reason it is necessary to construct a further fence along the boundary between Ngamiland and the Caprivi Strip, from Shakawe westwards to the South West African border.

9. The Veterinary Authorities of the Union of South Africa have made constant representations regarding the dangers arising from the possibility of spread of disease, from the uninterrupted movement of cattle from Ghanzi (which is next door to Ngamiland) on to the inter-territorial boundary on the Molopo and to their uncontrolled movement into the Native Reserves to the north and east. It is proposed, therefore, that a fence be erected in the Kalahari, to the south of the Tsane-Lehututu and across the Ghanzi stock trade route to

Ghanzi. The erection of such a fence and quarantine camp, apart from checking the movement of cattle, would create a substantial buffer zone, lying between the Kuki fence and the proposed new fence and would enable cattle to be drawn continually from the Molopo in the event of a further outbreak in Ngamiland. It should be stated at this juncture that the existence of such a buffer zone between the Central Bamangwato fence and the Makalamabedi fence was a prime factor in persuading the Union Veterinary Authorities to continue to take cattle from the eastern portion of the Northern Protectorate during the recent outbreak of foot and mouth disease in Ngamiland in 1958. For obvious reasons this buffer zone should be as wide as possible and the fence on its southern side should be so sited as to cut off movement of cattle from back areas such as Tsane-Lehututu on to the Molopo.

10. Apart from these three fences it is necessary, in order to ensure freedom of contact between cattle across the Makalamabedi and the Debeeti fences, to double those fence lines at places where contact is most likely to occur and where it is impossible adequately to maintain stock free zones. This will involve the erection of a second fence, parallel to the existing fence, from the Debeeti quarantine camp to the Union border at Palla Ranch and parallel to the Makalamabedi fence where the Botletle river crosses the existing fence line.

11. As stated above, the present fences and quarantine camps were erected following upon the recommendations of the Inter-territorial Committee on Foot and Mouth Disease at a meeting in Bulawayo in 1950. The existing fences have more than proved their worth in recent outbreaks of foot and mouth disease. Despite the existence of the disease south of the Debeeti fence along its whole length and east of the Makalamabedi fence, neither of these fence lines was breached by the disease, and that portion of the Protectorate north of the Debeeti fence and of the Bamangwato Reserve to the east of the Makalamabedi fence remained free of infection throughout. On the basis of experience, therefore, it is desirable that this method of controlling the passage of disease from one portion of the Territory to another should be developed and it is considered that such development, allied to a substantially increased inspectorate staff, will enable the Veterinary Authorities in the Protectorate to confine the disease more closely in the event of a further outbreak.

12. It was in view of the experience gained in Bechuanaland and elsewhere in Southern Africa where fencing has been practised that the following recommendations were made at the meeting of the Inter-territorial Committee on Foot and Mouth Disease in March of 1958. The scheme outlined above refers particularly to the second of the recommendations below:-

> "This meeting considers that the early detection of foot and mouth disease depends on frequent and regular inspection of cattle and therefore recommends that sufficient staff should be made available to ensure such inspection in the enzootic areas at not greater than 14 days intervals and in contiguous areas at not more than 30 days intervals."

13. Spread within a Territory and beyond can best be limited by rigid control of stock movements under permit, by fencing, fixed stock routes and quarantine camps allied to intensive inspection.

14. Due to the lack of territorial funds it has been decided

to fulfil the second recommendation first and to submit a further scheme for staff increases if and when the Administration of the Bechuanaland Protectorate is pressed to do so by her neighbours in Southern Africa.

(b) Relationship of proposed scheme to the Territorial Development Plan:

15. This Scheme is an essential part of the development plan of the Territory for 1960/1964 and provisional allocation of funds within the 1960/1964 allocation of C.D.W. funds to the Territory has been made.

(c) Reasons for calling on Colonial Development and Welfare Funds:

16. The Territory is unable to provide the necessary funds.

(d) Division of cost between local funds and Colonial Development and Welfare Funds:

17. The Territory is to bear the following proportion of the recurrent cost of the scheme.

1960/1961	Nil
1961/1962	25%
1962/1963	50%

(e) Availability of staff and materials to implement the Scheme:

18. Housing for Europeans and Africans to be erected by the Public Works Department. Fence lines to be cleared and fences to be erected by staff employed under the scheme.

(f) Arrangements to be made for executive and technical supervision:

19. Technical supervision of the buildings will be provided for by the Public Works Department and on the additional fencing by the Director of Veterinary Services.

(g) Professional advice and recommendations on which this application is based:

20. The Scheme is drawn up by the Director of Veterinary Services and the estimates of cost have been made partly by the Director of Public Works and partly by the Director of Veterinary Services.

APPENDIX I.

EXTENSION TO DISEASE CONTROL FENCES AND QUARANTINES.

FINANCIAL SUMMARY

1. Administering Authority	Bechuanaland Protectorate Government.
2. Allocation	Territorial.
3. Classification	Veterinary.
4. Description of Scheme	Permanent measures to control foot and mouth and other animal diseases; extension of existing fences.
5. Total cost 1960/1963	£175,091.
6. Colonial Development and Welfare Assistance required	Grant of £159,856.

7. Basis of Administration for accounting purposes

	£	£
Capital		122,985
Recurrent		
Personal Emoluments	20,960	
Other Charges	31,146	
		52,106
		£ 175,091

8. Basis of calculation of Grant required

		£
Capital	100%	122,985
Recurrent		
1960/1961	100%	11,968
1961/1962	75%	14,502
1962/1963	50%	10,401
		£ 159,856

9. Not applicable.

APPENDIX II.

EXTENSION TO DISEASE CONTROL FENCES AND QUARANTINES.

DETAILED ESTIMATES.

Item No.	60 61 62 / 61 62 63	Details of Expenditure	1960/1961	1961/1962	1962/1963	Total 1960/1963
			£	£	£	£
		CAPITAL				
1.		Motor Vehicles and Equipment	22,735	21,500	4,500	48,735
2.		Housing and Furniture	6,630	15,740	-	22,370
3.		Fencing Materials	25,690	6,005	-	31,695
4.		Water Supplies and Reticulation	2,750	-	-	2,750
5.		Clearing of Fence Lines	-	5,760	2,160	7,920
6.		Erection of Fences	-	6,607	708	7,315
7.		Offices and Stores	-	2,200	-	2,200
		TOTAL CAPITAL EXPENDITURE	£57,805	57,812	7,368	122,985
		RECURRENT				
		PERSONAL EMOLUMENTS				
		Division I				
8.	3 3 3	Fence Foreman, £504x24-576x30-726	1,134	1,566	1,638	4,338
		Division III				
9.	1 3 3	Quarantine Guard, Grade IV	63	261	297	621
10.	- 1 1	Pumper, Grade IV	-	84	96	180
11.	3 3 3	Grader Operator, Grade IV	189	279	315	783
12.	2 6 6	Motor Driver, Grade II	198	819	843	1,860
13.	1 1 1	Assistant Fence Foreman, Grade IV	63	93	105	261
14.	1 4 4	Gate Guard, Grade IV	63	345	383	791
15.	4 10 10	Fencers, Grade IV	252	876	996	2,124
16.		Casual Labour	945	1,890	1,890	4,725
		Allowances				
17.		Inducement Allowance	378	522	546	1,446
18.		Bechuanaland Protectorate	135	180	180	495
19.		Education	270	360	552	1,182
20.		Ngamiland (Local)	378	888	888	2,154
		TOTAL PERSONAL EMOLUMENTS	£ 4,068	8,163	8,729	20,960

Item No.	Details of Expenditure	1960/ 1961	1961/ 1962	1962/ 1963	Total 1960/ 1963
		£	£	£	£
	OTHER CHARGES				
21.	Travelling Expenses	354	473	473	1,300
22.	Transport	2,000	800	1,400	4,200
23.	Maintenance and Running of Vehicles and Plant	4,300	6,700	9,000	20,000
24.	Camping Equipment	500	1,600	300	2,400
25.	Uniform - Clothing	96	250	250	596
26.	Miscellaneous	500	1,200	500	2,200
27.	Hire of Railway Sites	150	150	150	450
	TOTAL OTHER CHARGES	£ 7,900	11,173	12,073	31,146
	TOTAL RECURRENT EXPENDITURE	£ 11,968	19,336	20,802	52,106
	TOTAL CAPITAL AND RECURRENT EXPENDITURE	£ 69,773	77,148	28,170	175,091
	Less Contributions from Bechuanaland Protectorate Government: 25% in 1961/1962 and 50% in 1962/1963	-	4,834	10,401	15,235
	GRANT REQUIRED	£ 69,773	72,314	17,769	159,856

NOTES ON ITEMS.

CAPITAL.

Item 1 : Motor Vehicles and Equipment, 1960/1961.

Allowance is made for the purchase of four 7-ton Albion Reivers at £3,760 each since these are the only vehicles suitable for the transportation of fencing materials from the railhead to the sites; for the purchase of five Fordson Major Tractors which are necessary to assist in the clearing work, for pulling graders for grading the fence lines and for replacement of existing tractors which have completed their useful span of life; for the purchase of five 3,000 model Graders for grading of fence lines and for replacement of existing graders which are too light for the job; for the purchase of three Water Tankers for the running on of water to labour gangs working remote from water supplies.

1961/62: Provision is made for the purchase of eight Land Rovers for patrolling of the Shakawe, Kuki, Kalahari and Makalamabedi fence lines and for the purchase of two D.6 Bulldozers. The latter vehicles will be used for clearing of fence lines according to the method prevailing in East Africa which will be a more economical way of clearing fence lines than has been the case heretofore.

1962/63: The estimate provides for the purchase of five more Land Rovers for patrolling existing fence lines in other parts of the country.

Item 2 : Housing and Furniture, 1960/1961.

The estimate provides for one European house at Kuki together with furniture for same and for five African rondavels, also at Kuki.

1961/62: Provision is made for two European houses, one at Phuduhudu and one at Makalamabedi together with furniture for same and for 18 African rondavels, nine at Phuduhudu, four at Shakawe and five for use as gate houses at the various points where the main roads cross the cordon fences.

Item 3 : Fencing Materials, 1960/1961.

The estimate provides for the purchase of 380 miles of fencing material as follows: 90 miles for the completion of the Kuki fence, 50 miles for the Shakawe fence and 240 miles for the Kalahari fence, together with transportation charges.

1961/62: The estimate provides for a further 80 miles of fencing materials.

Item 4 : Water Supplies and Reticulation, 1960/1961.

Provision is made for water supplies, i.e. reservoirs, pump engines, water tanks and piping at Phuduhudu.

Item 5 : Clearing of Fence Lines, 1961/1962.

The estimate is based on the operation of two bulldozers at £3 per hour each for 8 hours a day for 120 days.

/1962/1963:

1962/63: The same bulldozers operating at the same cost for 45 days.

Item 6 : Erection of Fences, 1961/1962.

Estimate is based on the employment of 42 casual labourers at standard rates of pay plus rations, and for 8 labourers at 7/6d. per day each plus rations. This number will be employed on each of four fences to complete the clearing of the fence lines and to erect 1,500 yards of fencing per day.

1962/63: Labourers to be employed on the same basis as in 1961/62 with the exception that they will be working on one fence only instead of four.

Item 7 : Offices and Stores, 1961/1962:

The estimate provides for the erection of one office at Shakawe at a cost of £2,200.

RECURRENT.

Items 8 - 16 : Personal Emoluments - Senior Service.

Item 8: Fence Foremen: The estimate provides for the employment of 3 European Fence Foremen for 9 months during 1960/1961 and for their continued employment on a yearly basis on normal increments during 1961/1962 and 1962/1963.

Item 9: Quarantine Guards: 1960/1961: Provision is made for the employment of one Quarantine Guard at £84 per year for 9 months.

1961/1962: provides for the continued employment of one Quarantine Guard and for the recruitment of a further 2 Quarantine Guards at £84 per year each for 12 months.

1962/1963: provides for the continued employment of the above 3 Quarantine Guards on normal increments.

Item 10: Pumper: 1961/1962: Provision is made for the recruitment of 1 Pumper at £84 per year for 12 months.

1962/1963: Provision is made for the continued employment of the above on normal increments.

Item 11: Grader Operators: 1960/1961: Provision is made for the employment of 3 Grader Operators at £84 per year each for 9 months.

1961/1962: The continued employment of the above on normal increments.

1962/1963: Continued employment on normal increments.

Item 12: Motor Drivers: 1960/1961: Provision for 2 Motor Drivers at £132 per year each for 9 months.

1961/1962: The continued employment of the 2 Motor Drivers on normal increments and provision for a further 4 Motor Drivers at £132 per year each for 12 months.

/1962/1963:

1962/1963: The continued employment of the above 6 Motor Drivers on normal increments.

Item 13 : Assistant Fence Foreman: The estimate provides for the employment of 1 Assistant Fence Foreman at £84 per year for 9 months during 1960/1961 and for his continued employment on normal increments during 1961/1962 and 1962/1963.

Item 14 : Gate Guards: 1960/1961: Provision is made for 1 Gate Guard at £84 per year for 9 months.

1961/1962: provides for the continued employment of the above Gate Guard on normal increments for 12 months and for the recruitment of a further 3 Gate Guards at £84 per year each for 12 months.

1962/1963: provides for the continued employment of the above 4 Gate Guards on normal increments.

Item 15 : Fencers: 1960/1961: The estimate provides for the employment of 4 Fencers at £84 per year each for 9 months.

1961/1962: provides for the continued employment of the above 4 Fencers on normal increments and the recruitment of a further 6 Fencers at £84 per year each for 12 months.

1962/1963: The estimate provides for the continued employment of the above 10 Fencers on normal increments.

Item 16 : Casual Labour: 1960/1961: Provision is made for the employment of 30 Casual Labourers at standard rates of pay plus rations for 6 months.

1961/1962: provides for the employment of 30 casual labourers at standard rates of pay plus rations for 12 months.

1962/1963: provides for the employment of 30 casual labourers at standard rates of pay plus rations for 12 months.

Items 17 - 20 : Allowances.

Item 18 : Bechuanaland Protectorate: Provision is made for 3 married Fence Foremen for 9 months during 1960/1961 and for 12 months during 1961/1962 and 1962/1963.

Item 19 : Education: 1960/1961: Provision for 3 Fence Foremen with 1 child each, for 9 months.

1961/1962: As above for 1960/1961.

1962/1963: provision is made for 3 Fence Foremen with 1 child each and 2 Fence Foremen with 2 children each.

Item 20 : Local: 1960/1961: Provision is made for Local Allowance in respect of 3 Fence Foremen for 9 months and for 12 married African staff.

1961/1962: provision for local allowance in respect of 3 Fence Foremen for 12 months and for 28 married African staff.

1962/1963: as for 1961/1962.

/OTHER CHARGES.

OTHER CHARGES.

Items 21 - 27

Item 21: Travelling Expenses: Provision is made for the payment of commuted travelling allowance in respect of 3 Fence Foremen for 9 months during 1960/1961 and for the continued payment of this allowance on a yearly basis during 1961/1962 and 1962/1963.

Item 22: Transport: Provision for the transport of stores and equipment during the period 1960/1961.

Item 23: Maintenance and Running of Vehicles and Plant: Provision for the maintenance and running of vehicles and plant purchased under the Scheme.

Item 24: Camping Equipment: 1960/1961: It will be necessary to purchase camping equipment in respect of 3 Fence Foremen and in respect of Casual Labour which will have to reside at loading and off-loading points remote from the conventional type of housing.

1961/1962: Provision for camping equipment for personnel employed on completing the clearing and erection of fences.

1962/1963: Reduced provision for replacement of tentage and other articles of camping equipment.

Item 25 : Uniforms: Provision is made for uniforms for increased African staff envisaged under the Scheme.

Item 26 : Miscellaneous Stores: Allowance is made for the replacement and purchase of miscellaneous stores such as picks, shovels, crowbars, wire strainers, etc., required to complete the work.

Item 27 : Hire of Railway Sites: A nominal sum for the hire of railway sites for the unloading and storage of fencing materials, approximately 400 tons capacity, prior to transportation to the proposed fence lines.

APPLICATION FOR GRANT FOR COLONIAL DEVELOPMENT AND WELFARE FUNDS TO PROVIDE FOR A TRYPANOSOMIASIS AND HELMINTHIASIS RESEARCH AND CONTROL UNIT FOR NGAMILAND.

(a) General description of scheme and advantages to be derived from it.

The encroachment of tsetse fly in Ngamiland has led in recent years to the engulfing of former marginal areas by the fly. This has led to the increasing constriction of available grazing grounds which has in turn brought its own problems of overgrazing and the gradual destruction of available veld in areas away from the fly. During the course of the last two years the Tsetse Fly Control Unit has been fully engaged in an attempt to halt the further advance of the fly and in this task the indications are that they are likely to be successful. It is now desirable that the defensive attitude which has been adopted in the past should undergo a change to one of bold and aggressive attack. It is now necessary to determine in which of the marginal areas it will be possible to maintain cattle, with a view in the long run, to consolidation of the front against the fly by human settlement based on mixed farming. The initial requirement is a knowledge of the present infection rate in the marginal areas among both cattle and tsetse fly, in order to determine whether cattle can be kept safely in the areas either with or without recourse to the use of prophylactic drugs. This will necessitate the continuous examination of dissected tsetse fly and the examination of many hundreds of smears from cattle which may be introduced into the marginal areas in order to determine the success or otherwise of prophylactic treatment in areas of light fly density. It is necessary also to provide facilities for the examination of cattle leaving known fly areas for fly free areas in order to ensure that transmission of trypanosomes by mechanical means does not occur in areas away from the tsetse fly. This is particularly of importance in the area around Lake Ngami which offers grazing to some 40,000 head of cattle in a tsetse fly free area. If mechanical transmission of trypanosomiasis were to occur around Lake Ngami, due to lack of obvious precautions, it would be a disaster of prime magnitude to the cattle industry of Ngamiland and of the Protectorate as a whole.

2. It is considered that if research and control measures are to be successful they should be in the hands of a separate, trained and highly mobile unit; the work of which would not be interrupted as is that of the normal field staff by emergencies arising out of outbreaks of other types of diseases such as foot and mouth disease. Such a unit would be under the direct control of a Research Officer who would, in turn, be directly responsible to the Director of Veterinary Services. Since the Unit would be required to conduct operations on several fronts and in several areas, the need for extreme mobility is obvious.

3. The Scheme provides for a Research Officer, who may be either a veterinarian or a zoologist, since research veterinarians are usually difficult to recruit, a European Laboratory Technician and a number of African personnel, who are considered essential to the successful operation of the scheme. To ensure mobility a mobile laboratory-cum-caboose is included together with two long wheel base landrovers to ensure freedom of movement at all seasons. Allowance has also been made for the building of kraals and crushes which are essential for adequate examination of cattle, for watering points in the areas chosen for investigation and for the purchase of experimental cattle.

/4. Other

4. Other charges comprise those which are usual in a scheme of this type namely for the maintenance and running of motor vehicles, the purchase of laboratory equipment, (slides, stains, reagents etc.) and camping equipment since the time of the unit will be spent almost wholly in the bush.

(b) Relationship of proposed scheme to the Protectorate Development Plan.

5. The scheme is an essential part of the development plan for 1960/1964 of the territory, and provision has been made from the territorial allocation of C.D.W. funds for allocation to the scheme.

(c) Reasons for calling on Colonial Development and Welfare Funds.

6. The territory is unable to provide the total necessary funds.

(d) Division of funds between the local funds and the Colonial Development and Welfare Funds.

7. 100% of capital expenditure will be borne by Colonial Development and Welfare Funds together with 100% of recurrent in 1960/1961; 75% in 1961/1962; and 50% in 1962/1963.

(e) Availability of staff and materials to implement the scheme.

8. Staff can readily be recruited either overseas or locally. Materials are readily available locally.

(f) Arrangements to be made for executive and technical supervision.

9. Executive and technical supervision will be provided by the Director of Veterinary Services.

(g) Professional advice and recommendations on which this application is based.

10. On the advice and recommendations of the Director of Veterinary Services in pursuance of the recommendations made by the World Health Organisation Consultant on Trypanosomiasis in Ngamiland.

APPENDIX I.

TRYPANOSOMIASIS CONTROL - NGAMILAND.

FINANCIAL SUMMARY

1. Administering Authority	Bechuanaland Protectorate Government.
2. Allocation	Territorial.
3. Classification	Veterinary.
4. Description of Scheme	Trypanosomiasis and Helminthiasis Research and Control Unit.
5. Total Cost	£54,678.
6. Colonial Development and Welfare assistance required	£30,612.

7. Basis of administration for accounting purposes

	£	£
Capital	11,700	
Recurrent	25,496	
		£37,196.

8. Basis of calculation of grant

			£	£
Capital	100%			11,700
Recurrent	1960/1961	100%	8,506	
	1961/1962	75%	5,735	
	1962/1963	50%	4,671	
				30,612

9. Other Accounting Instructions — Nil.

APPENDIX II.

TRYPANOSOMIASIS CONTROL - NGAMILAND

DETAILED ESTIMATES

Item No.		1960/1961	1961/1962	1962/1963	Total 1960/1963	1963/1964	1964/1965	Total
		£	£	£	£	£	£	£
	CAPITAL							
1.	Motor Vehicles	6,100						
2.	Kraals and Crushes	400						
3.	Water Reticulation	4,000						
4.	Experimental Animals	1,200						
	TOTAL CAPITAL	£ 11,700						
	RECURRENT (Sub-Head "A")							
	PERSONAL EMOLUMENTS							
	Divisions I & II							
5.	Zoologist	92+	960	996	2,880	1,032	1,074	4,986
6.	Laboratory Technician	888	924	960	2,772	996	1,032	4,800
	Division III							
7.	Laboratory Assistant, Grade I	150	168	186	504	204	222	930
8.	Microscopist, Grade I	150	168	186	504	204	222	930
9.	Motor Drivers, Grade II	264	300	336	900	372	408	1,680
10.	Cattle Guards, Grade IV	384	432	480	1,296	528	600	2,424
11.	Casual Labour: Lorry	120	120	120	360	120	120	600
12.	Labourers: Herd Boys	648	648	648	1,944	648	648	3,240
	Allowances							
13.	Inducement	604	628	652	1,884	676	702	3,262
14.	Bechuanaland	120	120	120	360	120	120	600
15.	Nganiland	288	288	288	864	288	288	1,440
16.	Education	336	336	336	1,008	336	336	1,680
17.	Gratuities			480	480		351	831
18.	Passages	475		950	1,425		475	1,900
	TOTAL PERSONAL EMOLUMENTS	£5,351	5,092	6,738	17,181	5,524	6,598	29,303

Item No.	Details of Expenditure	1960/ 1961	1961/ 1962	1962/ 1963	Total 1960/ 1963	1963/ 1964	1964/ 1965	Total
		£	£	£	£	£	£	£
	OTHER CHARGES							
19.	Travelling Expenses	500	100	100	700	100	100	900
20.	Commuted Subsistence Allowance	210	210	210	630	210	210	1,050
21.	Maintenance and Running of Vehicles	1,450	1,500	1,550	4,500	1,600	1,650	7,750
22.	Drugs and Laboratory Equipment	470	370	370	1,210	370	370	1,950
23.	Camping Equipment	200	100	100	400	100	100	600
24.	Uniforms	150	150	150	450	150	150	750
25.	Maintenance Wireless Equipment	25	25	25	75	25	25	125
26.	Miscellaneous	150	100	100	350	100	100	550
	TOTAL OTHER CHARGES	£3,155	2,555	2,605	8,315	2,655	2,705	13,675
	TOTAL RECURRENT EXPENDITURE	£8,506	7,647	9,343	25,496	8,179	9,303	42,978
	TOTAL CAPITAL EXPENDITURE	£11,700	-	-	11,700	-	-	11,700
	TOTAL SCHEME EXPENDITURE	£20,206	7,647	9,343	37,196	8,179	9,303	54,678
	Less Contributions from Bechuanaland Protectorate Government, nil, 25% and 50% of recurrent expenditure in 1960/ 1961, 1961/1962 and 1962/1963 respectively.	-	1,912	4,672	6,584	6,135	9,303	22,022
		£20,206	5,735	4,671	30,612	2,044	-	32,656

DEVELOPMENT OF WATER SUPPLIES IN THE BECHUANALAND PROTECTORATE. APPLICATION FOR COLONIAL DEVELOPMENT AND WELFARE FUND GRANT.

(a) Description of Scheme - Objects and Advantages.

The object of this application is to seek financial assistance from the Colonial Development and Welfare Fund to continue the development of water supplies in the Protectorate.

The development of underground water supplies began prior to 1939 with Grant No. 446, and continued after the war under Schemes Nos. D.678, D.1409 and D.2639/A/B/C and D. Present development can be divided into three sections as follows:-

(a) The drilling of boreholes: The Geological Department carries out geophysical investigations for the selection of borehole sites, and also instructs on the depths to which holes have to be drilled. It was inevitable that the drilling operations came more and more under the control of that Department, which eventually took over the whole drilling section - staff, transport and equipment. The continuance of the drilling programme will be considered under a separate scheme to be submitted by the Geological Department;

(b) The equipping of boreholes: This work will continue to be carried out by the mechanical section, which has been expanded on a permanent basis and will not require the addition of further staff and equipment to carry out the programme. If necessary, some of the work could be done by contract; and

(c) Improvements to existing water supplies: Nominal sums have been included under D.2639 for carrying out minor improvements, extensions or repairs to existing water supplies throughout the Protectorate, where the nature of the requirement is such as not to warrant a special application for funds to finance the work, and where the necessity may be urgent and require immediate attention. This type of work is not considered an appropriate charge to development funds and will not be included under the new scheme.

The development of surface water supplies began in 1948 with a grant under Scheme No. D.990, continued under D.1409/A and, in 1956, under D.2553. Originally intended for the completion of stock dams in Tribal areas, it was later expanded to include surface conservation works for township and railway supplies. This new scheme will not provide for surface conservation works for Government supplies.

Development under two schemes, underground and surface had disadvantages. Staff, engaged separately under the two schemes, tended to be used exclusively under their respective schemes, often leading to an uneconomical duplication of control. The position was aggravated by the complete absence of any permanent staff to deal with water supply operation and maintenance other than that provided for boreholes under the mechanical section. Normal routine extensions, including those covered in D.2639, had to be carried out by mechanical staff or

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staff engaged under D.2553.

The permanent establishment of the Department has been increased and, with proposals in the 1960/1961 draft estimates, includes sufficient staff to deal with the permanent operation and maintenance commitments, and who, in addition, can deal with a considerable amount of new development work. Major schemes, beyond the capacity of permanent staff, will be handled by consultants and/or contractors.

The policy now accepted is that funds for the development of Government supplies should be included in the loan programme, and that this will also include the equipment for boreholes at those Government supplies. The present application will provide for all other supplies such as Tribal and cattle route.

Included in this scheme is the first provision of staff to give technical advice to farmers for the construction of conservation works on farms. Two reports stress the need for this assistance, which will include the survey of dam sites, preparation of plans and contract documents, and supervision of the work. It is intended that the contracts will still be between farmer and contractor, or the farmer may elect to do the work with his own labour. Assistance for the construction of conservation works on farms is common practice in adjacent and other African territories, although the form of assistance varies considerably. It is felt that these proposals will be an appropriate start to giving assistance, and experience may indicate desirable changes.

In addition to the technical services provided to farmers, it is proposed to set up a works unit to construct and repair stock dams in the Tribal areas. The remainder of the scheme will be capital, as the completed installation of a borehole or construction of a dam represents capital improvement. The scheme is drawn up on a project basis, and all works costs, such as labour, fuels and lubricants, repairs and consumable stores, are to be charged to the project. This will also facilitate letting any of the work out to contract.

(b) <u>Relation of the proposed scheme to the Territory's Development Programme</u>.

The proposed scheme is an integral part of the proposed Development Plan for the Territory from 1960/1964 and funds have provisionally been allocated from the C.D.W. allocation devoted to that Plan.

The increased water supplies proposed will increase the agricultural and stock raising potentials of the country and so indirectly add to the general economic advance.

(c) <u>Reasons for calling on Colonial Development and Welfare Funds</u>.

The economy of the Territory does not make it possible at present to provide the necessary funds from the normal budget. In accordance with decided policy (see the Development Plan) initial provision of C.D.W. funds is sought for the first three years of the scheme only.

(d) <u>Basis of division of cost between Local funds and the Colonial Development and Welfare vote</u>.

The Territory is to bear the following proportion of the recurrent cost of the scheme:-

/1960/1961

1960/1961	-	Nil
1961/1962	-	25%
1962/1963	-	50%
1963/1964	-	75%

(e) Third Parties.

Not applicable.

(f) Availability of Staff, Materials and Labour.

Staff, materials and labour should be readily available from local sources.

(g) Capital Works.

Most of the Government work will be carried out by direct labour. For contract works, public tenders will be called for. For conservation works on private farms at the cost of owners, suitable advice will be given on the most economical way of completing the works, and will generally be for open tenders.

(h) Professional Advice.

This scheme is based on departmental professional advice.

APPENDIX I.

DEVELOPMENT OF WATER SUPPLIES.

FINANCIAL SUMMARY.

1. Administering Authority	Bechuanaland Protectorate Government.
2. Allocation	Bechuanaland Protectorate Territorial.
3. Classification	Water Supplies.
4. Description of Scheme	Development of Water Supplies in the Bechuanaland Protectorate.
5. Total Cost	£170,928.
6. Colonial Development and Welfare assistance required	Grant of £126,367.

7. Basis of Administration for accounting purposes

	£	£
Capital		107,550
Recurrent:		
Personal Emoluments	19,574	
Other Charges	5,972	25,546
Total		133,096

8. Basis of calculation of Grant required

		£
Capital	100%	107,550
Recurrent Expenditure:		
1960/1961	100%	7,930
1961/1962	75%	6,236
1962/1963	50%	4,651
Grant required		126,367

9. Any other accounting instructions — None.

APPENDIX II.

DEVELOPMENT OF WATER SUPPLIES.

DETAILED ESTIMATES.

Item No.	Details of Expenditure	1960/1961	1961/1962	1962/1963	Total 1960/1963	1963/1964	Total
		£	£	£	£	£	£
	CAPITAL.						
1.	Equipping of Boreholes	30,000	25,000	20,000	75,000	20,000	95,000
2.	Construction of Dams	5,000	5,000	5,000	15,000	5,000	20,000
3.	Vehicles, Plant and Accessories	11,550	2,000	1,000	14,550	3,000	17,550
4.	Hand Tools and Minor Equipment	500	250	250	1,000	250	1,250
5.	Camping Equipment	500	250	250	1,000	250	1,250
6.	Survey and Office Equipment	500	250	250	1,000	250	1,250
	TOTAL CAPITAL EXPENDITURE	£ 48,050	32,750	26,750	107,550	28,750	136,300
	RECURRENT.						
	PERSONAL EMOLUMENTS.						
	Division I.						
7.	Engineer (Civil)(£696x30-816x30-1032x42-1242x48-1386)	932	1,278	1,326	3,536	1,374	4,910
8.	Draughtsman/Surveyor (£576x30-816x30-888)	612	843	879	2,334	888	3,222
9.	2 Foremen (Works Staff Grade I) (£576 x 30 - 786)	1,482	1,512	1,542	4,536	1,572	6,108
10.	Casual Labour	600	700	800	2,100	900	3,000
11.	Inducement Allowance	1,008	1,211	1,249	3,468	1,278	4,746
12.	Education Allowances	240	240	240	720	240	960
13.	Bechuanaland Protectorate Allowances	160	240	240	640	240	880
14.	District Allowances	60	90	90	240	90	330
15.	Gratuities	600	600	800	2,000	600	2,600
	TOTAL PERSONAL EMOLUMENTS	£ 5,694	6,714	7,166	19,574	7,182	26,756

Item No.	Details of Expenditure	1960/1961	1961/1962	1962/1963	Total 1960/1963	1963/1964	Total
		£	£	£	£	£	£
	OTHER CHARGES.						
16.	Running of Staff Vehicles	800	900	1,000	2,700	1,200	3,900
17.	Travelling Expenses	400	600	600	1,600	600	2,200
18.	Motor Vehicle Subsidy	500	-	-	500	-	500
19.	Passages	436	-	436	872	-	872
20.	Incidental Expenses	100	100	100	300	100	400
	TOTAL OTHER CHARGES	£ 2,236	1,600	2,136	5,972	1,900	7,872
	TOTAL RECURRENT EXPENDITURE	£ 7,930	8,314	9,302	25,546	9,082	34,628
	TOTAL CAPITAL AND RECURRENT EXPENDITURE	55,980	41,064	36,052	133,096	37,832	170,928
	Less Contribution by Bechuanaland Protectorate Government: 0% in 1960/1961 25% in 1961/1962 50% in 1962/1963 75% in 1963/1964 of Recurrent Expenditure	-	2,078	4,651	6,729	6,812	13,541
		£ 55,980	38,986	31,401	126,367	31,020	157,387

NOTES ON ITEMS.

Item 1 : Equipping of Boreholes : 1960/1963 - £75,000.

The drilling of new boreholes under the existing development plan has outstripped the equipment of successful holes with power pump, windmills or handpumps, and it is proposed to cease contract drilling for the first year of the new development period to allow equipment of holes to catch up. It is anticipated that, at the start of this new scheme, 70 power units will be held in store, and an additional 40 mixed units will be required to complete the equipping of boreholes already drilled. Priority in the new programme will be given to the purchase of 40 additional units, and the completion of installations on 110 boreholes. In addition, it is anticipated that the Geological Department will continue to drill, by departmental rigs, 60 to 70 holes per year, and it is assumed that 50 will be successful, 40 requiring power or windmill units and 10 handpump. As far as possible the installations will be carried out by the mobile units of the mechanical branch, but it may be necessary to call on contractors to assist. It is intended that all charges in connection with the installations, such as purchase of equipment and works costs, shall be against this item, as the final completed installation is totally capital.

Item 2 : Construction of Dams : 1960/1963 - £15,000.

It is the intention to provide for the construction of stock dams in the Tribal Reserves, and to rehabilitate existing dams which may have become inoperative due to damage to the wall or deposition of silt. It is not anticipated that a heavy programme of work will have to be undertaken, and one construction unit should be sufficient. All works costs, as detailed for Item 1, are to be met from this Item.

Item 3 : Vehicles, Plant and Accessories : 1960/1963 - £14,550.

Most of the transport and plant bought under previous schemes has reached the end of its useful life, and is not available for construction. What useful transport and plant remains has been set aside for the use of the additional permanent staff to carry out maintenance and minor works. The requirements can be divided as follows:-

(a) Dam Construction Unit:

	£
No. 1 Truck	1,200
No. 1 L.D.V.	900
No. 7 Fordson tractors/hydraulic control	5,600
No. 4 Scrapers (2½ cu. yd.)	1,250
No. 2 Sprinklers	250
No. 2 Water carts	1,200
No. 1 Caravan	250
Minor items not specified	1,000
	£ 11,650

(b) Technical Services Unit:

	£
No. 2 L.D.V.'s	1,800
No. 1 Camp trailer	350
No. 1 Caravan	250
Minor items not specified	500
	£ 2,900

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Most of the above will be required in the first year of the scheme.

Item 4 : Hand Tools and Minor Equipment : 1960/1963 - £1,000.

For the purchase of hand tools and minor equipment such as picks, spades and shovels so essential for earthworks.

Item 5 : Camping Equipment : 1960/1963 - £1,000.

Camping facilities are essential on construction work, and this item is for the purchase of camp accommodation and equipment.

Item 6 : Survey and Office Equipment : 1960/1963 - £1,000.

This includes furniture for the additional office accommodation required for the technical services unit.

Item 7 : Engineer : 1960/1963 - £3,536.

The principal duties of the engineer will be concerned with the technical services to be given in the farming areas, but this will not preclude him from taking over any other responsibilities consistent with the post. Engagement on the £1,242 notch in July 1960 is assumed.

Item 8 : Draughtsman/Surveyor : 1960/1963 - £2,334.

To carry out all field survey work and to prepare the necessary plans. The greater portion of this work will be in connection with the technical services to farming areas. Engagement on the £816 notch in July 1960 is assumed.

Item 9 : Two Works Staff - Grade I : 1960/1963 - £4,536.

Essentially field officers. The one is intended for supervision of contract works in the farming areas, and the second to take over control of the departmental dam construction unit in the reserves. The transfer of the Works Foreman under the present scheme is envisaged, and the second is assumed to be engaged initially on the £696 notch.

Item 10 : Casual Labour : 1960/1963 - £2,100.

To meet the cost of casual labour other than that engaged on and charged to works under Items 1 and 2, and principally in support of technical services, e.g. survey boys.

Item 12 : Education Allowances : 1960/1963 - £720.

Two of the officers assumed to have one child each drawing an education allowance.

Item 13 : Bechuanaland Protectorate Allowance : 1960/1963 - £640.

All four officers will be stationed in the Protectorate and will be entitled to the allowance. All are likely to be married. Provision for 1960/1961 takes into account recruitment during the year.

Item 14 : District Allowances : 1960/1963 - £240.

To cover special allowances in districts like Ghanzi

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and Ngamiland. This is likely to be a small item and it would be convenient to include it under Item 12.

Item 15 : Gratuities : 1960/1963 - £2,000.

Allowances must be made for gratuities on conclusion of contract terms of service and may become due for staff engaged under the present scheme and leaving during the early part of this new scheme.

Item 16 : Running of Staff Vehicles : 1960/1963 - £2,700.

The two L.D.V.'s for the draughtsman/surveyor and foreman engaged for technical services will not be used against works votes, and should be regarded as staff transport vehicles. Funds under this item are for running and maintenance of these vehicles - the maintenance element increasing with the age of the vehicle.

Item 17 : Travelling Expenses : 1960/1963 - £1,600.

To meet the cost of travelling expenses.

Item 18 : Motor Vehicle Subsidy : 1960/1963 - £500.

Provision is made for a motor vehicle subsidy for the engineer. If the subsidy scheme is terminated, this provision should be included in Item 16.

Item 19 : Passages : 1960/1963 - £872.

To provide for passages should an officer be recruited from overseas.

Item 20 : Incidental Expenses : 1960/1963 - £300.

To meet the cost of unforeseen minor expenses not provided for in any of the Items above.